Gleanings in Bee Culture

Established 1873

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October, 1942

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The Monthly Honey Market

U. S. Government Report
Information from Producing Areas (last half of August)

Pacific Northwest:

West of Cascades. Weather conditions have been generally favorable for bee flights. A few days were cloudy with slight rains. Beekeepers report that the flow from fireweed will be well below normal with almost a failure in some Oregon sections. This is the second year in succession of a poor fireweed crop in Oregon. Bloom was about a month late and lasted only a short time. It is now believed the crop from spring flowers will be about two-thirds of normal while that from late flowers will be below. The Willamette Valley crop is reported by some sources to be around 50 pounds per colony or less. Color and quality are good with the body heavy. Sales have been light with price ranges very irregular. Ton lots Clover and vetch reported sold at 10½-11c; small pails 14½-17c per lb. Beekeepers reported selling beeswax at 40c per lb. delivered Portland.

East of Cascades. The weather in this section has been hot and dry. The yield to date has probably been around 50 percent of normal in most sections. Scale hives have shown very little gain since the middle of July, and in many sections bees are barely making a living with little or no surplus. Third-cutting alfalfa is blooming and some keepers believe prospects are promising for a good flow from this source. Few sales were reported, with some amber clover in single 60s at 10-11c per lb. and small pails at 13-15.8c per lb., few high as 17c f.o.b. Sales of sweet clover-alfalfa reported at 12c per lb. delivered Portland. Beeswax 40-45c, mostly 40-41c per lb.

Intermountain Region:

Late reports confirm early impressions of an extremely spotted crop, not only for the Mountain States as a whole but for individual States. Honey is moving fairly well, but price ranges are wide, depending to some extent upon the ceilings of individual buyers. A number of beekeepers have sold White sweet clover alfalfa on the basis of 10c per lb. advance and cans returned. Other carlots and less have moved at 10-11c per lb., some with cans returned, and one car Water White reported sold at 11½c; few ton lots low as 9½c per lb. and some ton lots Water White high as 12c per lb., 60s, 11-13c, small pails, 12-14c per lb.; Light Amber, ton lots, 9-9½c, few low as 8 1-3c, 60s, 11c per lb.; Amber, 9-10c per lb. Beeswax is moving well at 40-42c per lb. Cappings are being melted and it is believed that wax supplies should increase during the next two months.

SOUTHWESTERN STATES

Southcentral and Southwestern Texas. The crop in this section was below normal. The Horsemint crop was almost a failure and the Cotton honey crop a failure in some sections on account of too much rain and poison dusting. Yields in the Mesquite districts were figured around one-third of normal in good areas; but occasionally no surplus. Sales reported, extracted in small pails 10-13⅓c per lb.

Southeast Texas. Many apiaries in this section are suffering the effects of cotton poison. Some colonies have been killed outright. Where colonies are still in good condition bees have obtained some nectar from various summer bloom, but little more surplus honey is expected. Some nectar is coming into the hives from fall weeds, but mostly will be used for winter stores. Sales reported small pails at 12c per lb.

Lower Rio Grande Valley. The summer crop of honey has been light in this section. Though bees do not get cotton honey in this area, some yards have suffered heavily from cotton poison, losses from this cause being reported double those of 1941. The dust apparently spread to brush and weeds on which bees were working. Heaviest losses were caused by airplane dusting, with none from tractor dusting, the reason attributed being that the tractor keeps the dust in the cotton field and away from flowers in other fields. Inquiry from wholesalers and chain stores reported good. Ten-pound pails reported selling better than before sugar rationing. Sales reported extracted Mixed Flowers, ton lots 9-10c; small pails, 10-10½c 1-lb. glass jars, 14-15c; White extracted, 60s 12c; 1-lb. jars, 17c; chunk honey, small pails, Mixed Flowers, 12½c per lb., White 15c per lb. Beeswax, average yellow, 38-40c per lb.; better grades, 40-45c per lb.

Northeastern Texas. There is some moving and changing of location of colonies in this section, especially in those sections where cotton is being dusted or sprayed. Condition of the bees is generally good. Showers during the early part of this period have helped to keep down poisoning in some sections, and have also kept bees from gathering all available nectar.

Montana. The honey crop in Montana has been rather disappointing so far, estimates running from 50 percent of a normal crop to a normal crop in some sections. Plants are drying up and prospects for much additional flow seems doubtful. Extracting in this section has been a little late.

Nevada. Reports so far indicate the honey flow extremely spotted. Some beekeepers report a 60 pound surplus already extracted while others report none. Second-cutting alfalfa is continuing to yield.

SUMMARY

It is still too early to determine what the 1942 honey crop will be. However, increased extracting activity in many sections bears out the fact that for the country as a whole yields will be below normal, despite an increase in the number of producing colonies. In California, the Pacific Northwest, and Intermountain region yields have been spotted. With the exception of Colorado, Utah, and Idaho, where some beekeepers report a crop about normal and in some cases slightly better than normal, all the States in these regions are estimating their yields under those of last year. Reports from the Plains States and White Clover Belt are also less cheerful than was anticipated a few weeks ago. Beekeepers who had been hopeful of adding to their surplus by the substantial fall flow which had been indicated by the early condition of fall plants and by colony strength, now report that fall prospects are not materializing in most areas. The color of this year's main honey crop is usually White or lighter, but in Illinois and occasional other States considerable dark honey has been reported. Because of the spotted nature of the fall flow many beekeepers are already anticipating the need of sugar for fall feeding.

Local demand for honey, although not quite as active as a few weeks ago, continues good and beekeepers are receiving many inquiries for large lots. Many beekeepers and buyers, however, are holding off honey transactions until the announcement of the price ceilings of the Office of Price Administration which are now in process of development following the meeting on August 10 at which formulas were discussed for puncturing the ceiling for honey at different price levels. The special price ceiling regulations for beeswax which have been under consideration by the OPA for the last month have also not been released.

Prices of large lot sales of honey have not recently ranged quite as widely as they did a few weeks ago. The market seems to have stabilized for most sales of white honey between 10 and 13c per lb., averaging perhaps 11-12c. Comb honey continues sharply above the price of a few months ago, although in some sections the higher levels for comb have receded slightly. Average yellow beeswax ranges generally 40-42c per lb. f.o.b. shipping point. To an increasing extent sales are being made direct to customers who bring their own containers, and because of the shortage of tin it is expected that this type of sale will increase as the season goes on. More and more sales are being made on the basis of cans returned or exchanged. Beekeepers and dealers both should handle containers as carefully as possible because all tin containers will have to serve a longer period of usefulness than in past years.

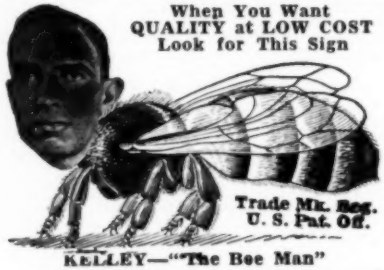
Increasing labor difficulties are being experienced by beekeepers in all sections of the country as men are being called into the armed forces or are obtaining jobs in war industry plants.

Monthly Report of Honey Producers

Early in September we sent the following questions to honey producers: 1. What is the final average yield per colony to date this season in your locality of (a) Extracted honey? (b) comb honey? Give answer in pounds. 2. How does this compare with the average yield for your locality? Give answer in per cent. 3. At what price has honey been sold or contracted for, if any, in large lots (carload or less) in your locality, during the past month, for (a) extracted honey per pound? (b) comb honey, fancy, and No. 1, per case? 4. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy, and No. 1, per case? 5. What is the retail price to consumers in your locality for (a) extracted honey in 5-lb. pails, or other packages in terms of 5-lb. pails? (b) comb honey, fancy, and No. 1, per case? 6. How is honey now moving on the market in your locality,? Give answer in one word, as slow, fair, or rapid. 7. What is the condition of the colonies for winter in your locality compared with normal, considering the number and age of bees and the supply of stores? Give answer in per cent. The answers received are tabulated as follows:

Sept. Date.	State Name	1. Aver. yield per colony Ex.	Comb.	2. Comparison.	3. Carload lots Ex.	Comb.	4. To grocers. Ex.	Cb.	5. To consumers. Ex.	Cb.	6. Movement.	7. Cond. of colo.
8	S.-Ala. (J. C. Dickman)						.50	4.80	.60	.25	Fair	100
14	B. C. (A. W. Finlay)				.15		.90		1.25		Rapid	
14	S.-Calif. (L. L. Andrews)	20		40	.12				.95	.22	Fair	65
15	C Calif. (Davis Bros.)	85		100	.10½				1.05		Fair	100
14	SE-Colo. (Otis E. Adcock)	30		50	.09¾		.65	4.50	.80	.25	Rapid	100
14	E-Conn. (Allen Latham)	75	70	125					.60		Fair	80
14	S-Fla. (C. C. Cook)	45	0	50	.08		.55		.80		Rapid	100
14	C-Fla. (Harry Hewitt)	40		80			.68		.80		Slow	100
16	SE-Ga. (J. J. Wilder)	60	50	90	.10	.12½*		4.30*	.85		Rapid	100
11	NC-Ills. (A. L. Kildow)	15	5	12	.11				.75		Rapid	100
8	S-Ills. (Carl E. Killion)	15	0	10		4.50			1.02	.24	Fair	85
8	NC-Ind. (T. C. Johnson)	35		50			.70	4.00	.85	.25	Fair	75
9	NW-Ind. (E. S. Miller)	40	20	40			.75	3.60	.90	.20	Fair	100
9	W-Iowa (E. G. Brown)	75	10	45	.11		.75		.95		Rapid	100
16	N.-Mich. (Ira D. Bartlett)	80		80	.12		.75		.89		Fair	80
9	E-Mich. (L. S. Griggs)	40	20	30					1.00	.25	Fair	100
10	S-Mich. (Floyd Markham)	50		40	.12	4.00	.75	4.80	1.00	.25	Rapid	100
10	C-Mich. (E. D. Townsend)			60	.13						Rapid	100
10	W-Minn. (B. L. Morehouse)	90		80	.12		.78		.95		Rapid	100
14	S-Minn. (J. F. Garner)	100		75	.11	4.00	.70	4.25	.90	.20	Fair	110
	C-Nebr. (J. H. Wagner)	125	90	125					.79	.28	Slow	100
14	W-Nev. (Geo. G. Schweis)	60	40	60	.10	3.75					Fair	
15	W-N. M.(C. A. Baltzley)	140		140	.08		.45		.69	.25	Fair	100
9	W-N. Y. (Adams & Myers)							4.80		.30	Rapid	100
14	NW-N. Y. (Geo. B. Howe)	75	50	50	.10	4.20	.70	4.00	.85	.28	Fair	100
14	NW-N. C. (C. S. Baumgarner)		30	75						.35	Fair	50
15	SE-N. C. (W. J. Martin)	100		100	.08½		.78		.95	.28	Fair	100
8	C-Ohio (R. D. Hiatt)	60	15	50	.12		.85	4.80	1.15	.27	Fair	100
15	NC-Okla. (C. F. Stiles)	20	0	60			.65		.80		Fair	80
8	C-Penn. (Harry Beaver)	90		90			.70	5.00	.80	.25	Rapid	100
9	SE-Pa. (D. C. Gilham)	4		10	.13		.80	4.25	1.10	.25	Fair	50
14	SE-S. D. (J. F. Norgren)	150	110	140	.11		.75		.85	.20	Fair	100
14	C.-Texas (T. A. Bowden)	25		25			.60		.75		Rapid	75
12	S-Texas (J. N. Mayes)	5	0	10	.07		.55		.60			50
11	S-Texas (H. B. Parks)	43	0	98			.45		.58		Rapid	100
15	N-Utah (Wm. Moran)	50		80	.10¼		.70		.80		Fair	90
14	W-Vt. (Phillip Crane)	100	45	100			.88	4.75	1.25	.30	Rapid	100
9	SE-Wisc. (N. E. France)	110			.12½				.68		Fair	90
10	N-Wyo. (Earl C. Reed)	80	40	50	.11		.75	5.50	.89	.29	Rapid	100

*Chunk Comb Honey



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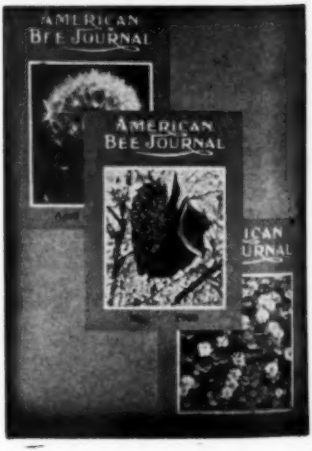

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No. 10

Gleanings in Bee Culture

October
1942

Honey as Seen by the Food Chemist*

By George P. Walton

Agricultural Chemical Research Division,
Bureau of Agricultural Chemistry and Engineering,
U. S. Department of Agriculture

[Paper read at Niagara Falls National Meeting, Nov. 13, 1941.—Editor.]

It is an honor to have been asked by Dr. Phillips to speak on this program, on the chemical characteristics of American honeys, and I greatly appreciate the invitation to take part.

We have heard a good deal recently about scientific research having outdistanced our ability to make economical use of it, and how we ought to call a halt, turn our attention to practical application of the fruits of accomplished research, and "cash in" on this "accumulated surplus" of what, admittedly, has been a highly profitable form of investment. To halt fundamental research would be a short-sighted policy for the future, but it is a fact—which should be set right—that in many industries we do not make the most out of the established scientific knowledge available to us.

Since it is not unlikely that the honey-producing industry may be in this category—at least "in spots"—your Program Committee feels that this is an excellent opportunity to take stock of our progress in making use of the established facts in the "science of honey."

In a review of this kind, it is unavoidable that much of the information will be "old stuff" to many of you. However, I trust that you will bear with me, in the belief that through repetition of the chemical facts regarding honey, they may be better put to work to the benefit of the quality of our honeys of commerce.

* Agricultural Chemical Research Division Contribution No. 50.

First, let us consider the "classical" definition of honey: It is the nectar of flowers, gathered, modified, and stored in the comb by honeybees. It is a natural foodstuff, probably the sweetest directly produced in great quantity in nature—adapted from time immemorial to the diet of mankind.

Since scores of flowering plants serve as the source of the nectars gathered by bees, honey is not a definite, uniform commodity.

From the food chemist's — or, rather, the food technologist's—viewpoint, however, liquid honey is too often just a heavy sugar sirup containing about 5 percent of minor miscellaneous constituents. These miscellaneous constituents, although minor with respect to the amounts in which they occur in honey, nevertheless account for its color, flavor, aroma, and certain other properties. Together they constitute a most important difference between honey and a good, heavy-bodied invert sugar sirup. Another important difference is, of course, the preponderance of the sugar levulose in honey. The "minor" constituents account, also, for the great differences in color, flavor, aroma, and characteristics among honeys of different floral nectar types. What may be called the generalized average composition of American honeys, but an analysis which possibly does not fit an individual type of honey would be: Moisture, 18%; levulose, 40%; dextrose, 35%; sucrose, about 2%; dextrin, say 0.8%; acidic substances, 0.1%; ash, or mineral matter, 0.1%; and

approximately 4% of what has been described as "undetermined".

Since extracted (liquid) honey ordinarily is 93 to 98 percent (the above analysis shows 95 percent) sugar sirup, let us first consider the sugars of honey.

Straight floral nectar honey contains only the three sugars, levulose, dextrose, and sucrose, in noteworthy amounts. A fourth sugar occurs in relatively large amount in one type of honeydew honey. This is the trisaccharide sugar, melezitose, the occurence of which is comparatively rare except in honeydew honey. Levulose, also called fruit sugar, or fructose, is probably the sweetest of the common sugars, and is the one that occurs in largest amount in ordinary honey. Because of its high solubility in water, levulose rarely, if ever, crystallizes out of honey. Dextrose is commonly known as d-glucose, corn sugar, or sometimes as grape sugar, since it occurs in that fruit. Less sweet than either levulose or sucrose, dextrose is also less soluble in water. This lower solubility of dextrose accounts for the fact that under favorable conditions it commonly crystallizes in honey, producing what is called "granulation". Sucrose, the third sugar, of which rarely more than 8 percent (usually 1 to 3 percent) is present in honey, is common table, or white, sugar.

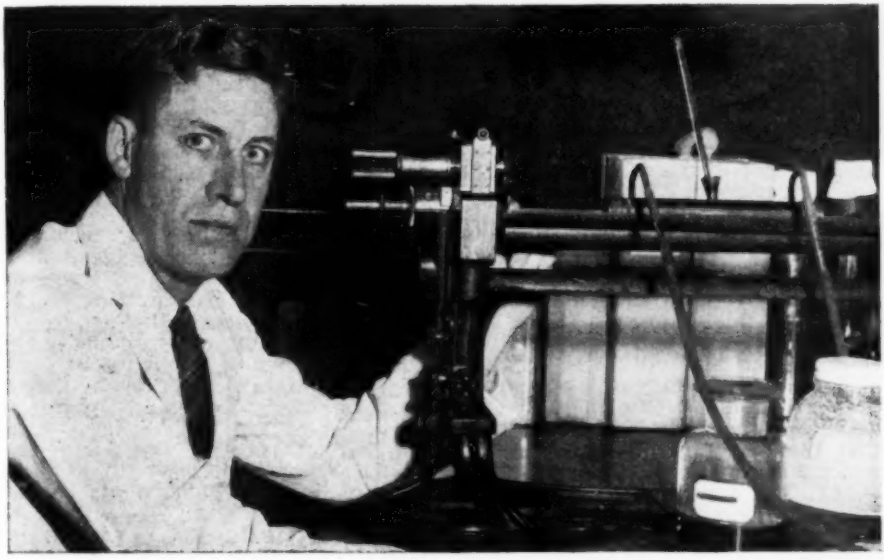
The proportions of the two principal sugars, levulose and dextrose, vary considerably in different honeys; for such honeys as those from the clovers, alfalfa, buckwheat, and cotton, all of which are prone to granulate, the ratio of levulose to dextrose (or quotient obtained when we divide the percentage of levulose present by that of dextrose) is around 1 to 1.1. For honeys such as mountain sage and fireweed from the West, or Southern sourwood honey (that show little or no tendency to granulate), the ratio of levulose to dextrose varies from around 1.25 to 1.45; and finally, for honeys that rarely, if ever, granulate, such as good, straight tupelo honey, this ratio averages around 1.70. Extreme ratios of levulose to dextrose for southern tupelo honey have been reported as 1.54 and 1.97. The latter figure is from Dr. C. A. Browne's famous Bureau of Chemistry Bulletin No. 110, published in 1908, on the composition of American honeys. This means that for the tupelo honey reported by Dr. Browne, the content of levulose amounted to nearly twice that of the dextrose, the figures being about 48 percent for levulose and a little over 24 percent for dextrose.

Now, since granulation of honeys is the crystallizing-out of the dextrose sugar—and levulose rarely, if ever, crystallizes—it is evident that this ratio plays an important part in granulation. Not only does the levulose sugar not crystallize out of honey, but there is evidence that it assists in keeping the dextrose in solution. Levulose also may be credited with much of the desirable moisture-retaining property of honey when used as an ingredient of breads, cakes, and other baked goods.

Two measures are available to honey producers and bottlers for the control of granulation. The first is the commonly practiced one of heating the honey to make certain that all crystals of sugar, however fine, are re-dissolved. This removes all nuclei for crystal formation; and honeys that have been heated at 140° F. for a short period of time, or at 160° for a so-called "flash-heating", will often remain liquid for a long time. In bottling this honey, care should be taken with the gate valve and the other equipment to see to it that no sugar crystals enter the honey at the time of filling the containers. The other measure that may be helpful in retarding granulation is to store the honey at a temperature above 65° F. Granulation is most likely to occur between 50 and 65° F.

While on the subject of sugars in honey, let us consider the sweetening power of honey in relation to that of individual sugars. Very little direct experimental work has been done to determine the relative sweetening power of honey. But the relative sweetening power of common sugars has been determined by actual tests, employing a jury of tasters for the purpose. On this basis, with sucrose, or common white sugar, rated as 100, levulose sugar has an average rating of about 175, and dextrose 66.* It is therefore easy to calculate roughly the relative sweetening power of a given honey, knowing its composition. Applying these figures to our

* Dahlberg and Penczek, "The Relative Sweetness of Sugars as Affected by Concentration", Technical Bulletin 258, Geneva, N. Y. Agr. Expt. Sta. reported only this year that the relative sweetness of dextrose, corn sirup solids, and maltose increases as the concentration increases until at 40 grams of dextrose in 60 grams of water, the sweetness equals that of a sucrose solution of the same concentration.



Mr. George P. Walton received his Bachelor of Science in Chemistry, also his M. S. from George Washington University. He became Assistant Chemist in the Old Bureau of Chemistry in 1912, engaging first in pure food enforcement work and later on in research work. In 1939, Mr. Walton entered his present work as Associate Chemist, Carbohydrate Research Division. Incidentally, Mr. Walton is chairman of the Honey Utilization Committee of the American Honey Institute.

generalized average analysis for honey we get a relative sweetening power of 95; and for tupelo honey, containing more levulose, we get a figure of 101 (both are on the basis of sucrose being 100). These figures show no great difference in sweetening power between the various honeys and mean that, roughly, we may consider honey about equal in sweetening power to common white sugar.*

Although undesirable fermentation of honeys is more related to the moisture content and the number of live yeast cells present than it is to sugar content, nevertheless fermentation may well be considered in connection with granulation. The reason for this relationship can best be explained by considering a specific case. Suppose we have 100 pounds of a readily granulating honey, such as alfalfa honey, containing 37 percent dextrose and 19 percent moisture. Now the critical moisture content at which fermentation is apt to occur in an unheated honey stored in a cool place has been found to be about 21 percent. We will assume that this 100 pounds of honey has granulated to the extent that 20 pounds of the 37 pounds of dextrose present has granulated. In granulating, it has taken one-tenth of its weight of water away from the liquid honey, making 22 pounds of crystals outside of the system of liquid honey. This means that there remains 78 pounds of the liquid, containing only 17 pounds moisture, or natural water, but the 17 pounds amounts to well over 21 percent of the weight of liquid honey. Hence, other conditions being right, such liquid honey would be likely to ferment. If the original moisture content were 20 instead of 19 percent, the tendency to ferment would be all the greater, since in that case the moisture in the liquid portion would exceed 23 percent. Measures for controlling fermentation include so-called pasteurizing and storage under conditions that retard fermentation. Prof. F. W. Fabian and his associates at Michigan State College of Agriculture, East Lansing, Michigan, have reported (Technical Bulletin No. 92) that heating honey at 145° F. for 30 minutes (with provision that all parts of the honey are at this temperature for this length of time) pasteurizes the honey sufficiently to inactivate yeast cells. Other investigators have found that storing honey at temperatures below 50° F. inhibits fermentation. Storing honey

* On a wieght-for-weight basis.

at 52-65° F. seems most likely to encourage fermentation.

Before leaving the subject of sugars in honey, the use of honey in confectionery should be considered. Outside of a few commercial lines of 5-cent honey bars, perhaps the chief use of honey in the candy industry is making fine nougat. Originally nougat was made entirely from honey, so far as its sugar ingredient was concerned, but with the advent of cheaper commercial sugars, the use of honey fell off in the making of nougat in this country. There still are, however, manufacturers of fine candies who are willing to pay the price to obtain honey of the kind required for nougat. One manufacturer of such fine candy told the writer that the requirements in honey for making nougat are as follows:

(1) The honey must have a pronounced flavor that carries over into the finished candy.

(2) There must be an absence of grain-forming tendency traceable to sugars.

(3) The finished candy must have a light color. It should not darken due to the cooking of the honey used.

Honeys formerly favored in the manufacture of fine nougats in this country were so-called Mt. Hymettus honey from Greece, produced from the wild thyme plants growing on Mt. Hymettus, pronounced-flavor honeys from the West Indies, and even a very high-priced vanilla-blossom honey, rare enough to be considered a museum piece. This would appear to be an excellent opportunity for introducing pronounced-flavor southern honeys to the confectionery trade. It is understood that tupelo honey has been tried and has given fair satisfaction and that ti-ti and gallberry honeys have been considered. There must be other southern honeys that can very well fulfill the requirements of this industry.

The facts that have just been brought out regarding sweetening power and sugar content of honeys provide a basis for prescribing the quantities of average honey in comparison with the quantity of sucrose (table sugar) that should be used for a given purpose in food industries. Where honey is to be used for its total content of sugars, irrespective of sweetening effect, one could prescribe 1⅓ pounds of average honey as being the equivalent for each one pound of sugar. Where total-solids content is the basis for comparison, 1-1/5 to 1-1/4 pounds of honey ordinarily would be the equivalent of one pound of sugar, and the food technologist should remember that in the case of honey, the extra 1/5 or 1/4 pound is water. For sweetening power, pound for pound appears to fit the available information, although this ratio may be subject to some variation.

The "minor constituents" make up around 5 percent of average honey. Among these constituents, those in greatest amount are dextrins and a group of substances called "colloids" which are chiefly made up of nitrogenous substances, probably of protein-like nature. Although honey dextrins appear to be carbohydrates, they should not be confused with commercial dextrins, which are converted starch products. Honey dextrins have been reported to be of a simpler nature, more like sugars of high molecular weight. Although the average dextrin content of honey may be considered to be around 0.8 percent, true honeys occasionally contain upwards of one percent of dextrin. On the other hand, honeydew honeys commonly contain much higher percentages of this constituent; the dextrin content is, therefore, of importance to the chemist in differentiating between true floral-nectar honeys and those produced from honeydew.

Colloids of honey ordinarily amount to from 0.1 to 1.0 percent. Over one-half of the colloidal material of honey consists of protein-like bodies. These substances play a part in undesirable scorching and darkening of honey when it is heated or cooked. They also are a handicap to the use of honey in carbonated beverages. Probably the undesirable turbidity and even the formation of flocculent precipitates in such beverages are due to the colloids present when honey is used as an ingredient.

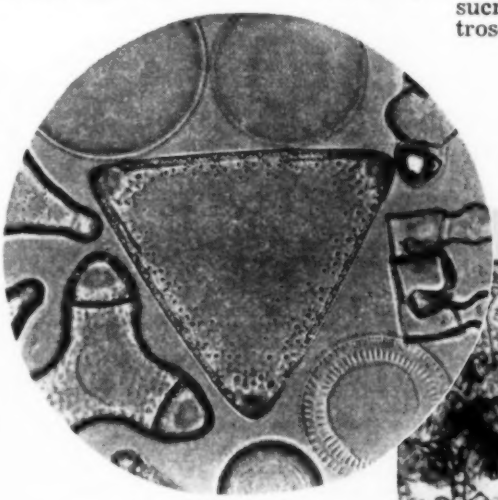
Substances responsible for the acidity of honeys ordinarily amount to around 0.1 per cent if the calculation be based upon the assumption that the acid is formic acid. Actually, formic acid constitutes only a part of the total acidity of honeys. A more practical measure of acidity to the food technologist is the pH value, which expresses the active acidity or alkalinity of a dissolved substance. The pH value of honeys commonly ranges between 3.6 and 4.2. The lower the pH value, the higher is the active acidity. Extreme ranges re-

ported for honeys are 3.2 to 4.9. Now vinegars show pH values from 2.4 to 3.4, the average being about 3.12. Strange as it may seem, therefore, the most-acid honeys have an active acidity equal to that of the least-acid vinegars. This means that were it not for the sugar content of the most-acid honeys, they would taste as sour as some vinegars. The pH value of honey is an important factor to the food technologist when he attempts to combine honey with milk products.

After allowing for the water, the sugars, the 0.8 percent of dextrin, the 0.1 percent of acidic substances, and the 0.1 percent of ash or mineral matter of average honey, we still have to account for approximately 4 percent of undetermined constituents. This "undetermined" 4 percent is not entirely undetermined. We have mentioned that the colloids may amount to an appreciable fraction of 1 percent. The balance includes the substances that impart color, flavor, aroma, and "biological activity" to honeys. In this last category are the wild yeast cells, the active digestive agents (enzymes) and pollen grains. Other constituents occasionally occurring in appreciable amounts in honey are tannins and particles of beeswax. Some of these substances —including wax particles, the larger pollen grains—and others less well defined—cause the natural turbidity of extracted honeys. A process for the removal of the constituents causing this cloudiness in honey (where such removal is considered desirable) was developed in the Department of Agriculture in 1934-35 by R. E. Lothrop and H. S. Paine. This process (described in U. S. Patent No. 2,070,171) comprises mixing the honey with a small amount of an inert, diatomaceous earth* (called a "filter aid"), warming the mixture quickly to around 140° F., and filtering by forcing the honey through a filter press of the conventional type.

Tannins are responsible, at least in part, for the dark color of some honeys. Substances of this natural chemical group darken upon contact with the oxygen of the air. Furthermore, tannins combine with dissolved iron to form dark pigments, of which the coloring matter of common black (nut-gall) ink is a good example. This is one of the reasons why honey should not be allowed to come in contact with uncoated iron equipment.

Most unheated honeys are known to contain three active enzymes in significant amounts—invertase, diastase and catalase. The diastase or starch-digesting enzyme is of importance in the use of honey in baking since the baker must take it into account in connection with the handling of his doughs. Invertase is responsible for the small content of sucrose and large amounts of dextrose and levulose in honey. Due to



*Above: Fossil marine diatoms.--Photo by Paul S. Conger, Carnegie Institution of Washington. Enlarged x300.

*Below: Pure diatomaceous earth from fresh water lake peat.--Photo by Paul S. Conger, Carnegie Institution of Washington, Enlarged x100

the presence of invertase, the sucrose has been inverted to reducing sugars.

Among progressive members of the honey industry, there has been increasing realization that more must be learned about the "extra dietary" and health values of honey. These extra values have not, up to the present, been demonstrable from the known content of basic nutrients in honey. There has been a growing demand for more knowledge about the "undetermined 4 percent" of average honey, in the belief or hope that the presence of some substance having therapeutic value or some vitamin fraction or new accessory food substance, may be discovered. However, this is more in the province of "What We Do Not Know About Honey."

The vitamin question is much to the fore at this time, as all of us realize, but so far as honey is concerned, the Department's specialists in vitamin work hold that ordinarily honey does not contain significant quantities of the common vitamins. This does not necessarily mean that vitamins are ruled out entirely. German workers in nutrition have reported from time to time that an occasional lot of honey contains one or more of the vitamins. But, more important, perhaps, is the possibility that there has not as yet been time and opportunity to investigate honeys as to their content of the newly discovered vitamin fractions, or food factors.

This does not exhaust the list of interesting constituents of honey about which considerable is known. We might discuss such substances as produce color, flavor and aroma of various honeys, or the role that pollen plays. But, it is believed, this period can be made of more service if, in conclusion, some of the ready sources of scientific information on the chemistry and technology of honey are noted.

Often the information you may need is as readily available as the nearest library, or can be quickly obtained merely by writing a brief note of inquiry and at the cost of a 3-cent stamp. The accumulated results of scientific research are available to you through your State Agricultural Experiment Station, and through the U. S. Department of Agriculture at Washington. Then, there is the American Honey Institute, Madison, Wisconsin—perhaps the best source of tried and approved recipes for the use of honey in the home. And there are the files of your bee magazines, containing a great store of information about honey, which we understand is available to you through the courtesy of their editorial departments. Finally, there are the scientific reference books on honey, sugars, and other foods, including that veritable encyclopedia of the science of honey, "The ABC and XYZ of Bee Culture", which Mr. E. R. Root revises and brings up to date every five years. A few selected references reporting the results of scientific research into the composition and properties of honeys follow:

Chemical Analysis and Composition of American Honeys, by C. A. Browne (with Microscopical Study of Honey Pollen by W. J. Young); Bureau of Chemistry Bulletin No. 110 (pub. 1908—now out of print).

Chemical Analysis and Composition of Imported Honey from Cuba, Mexico and Haiti, by A. H. Bryan, A. Given and S. F. Sherwood; Bureau of Chemistry Bulletin No. 154 (publ. 1912—now out of print).

Physical and Chemical Properties of California Honeys, by J. E. Eckert and H. W. Allinger; Univ. of Calif. and Calif. Agr. Exp. Sta. Bulletin No. 631 (Aug. 1939).

Chemical and Physical Properties of Honey, by R. E. Lothrop, publ. in "The ABC & XYZ of Bee Culture", 1940 Edition, pp. 382-395; and in "Gleanings in Bee Culture", commencing with Nov., 1938, p. 684.

The Composition of Honey and Its Utilization—Relation of Composition and Viscosity, by R. E. Lothrop, in American Bee Jour., March 1939, pp. 130-133.

A New Method for Processing Honey, by R. E. Lothrop and H. S. Paine, publ. in Amer. Bee Jour., December 1934, p. 542; and in The Glass Packer, Nov. 1934, p. 705.

A Small Plant for Filtering Honey, by H. S. Paine and R. E. Lothrop, in American Bee Journal, vol. 75, No. 7, pp. 326-330, (July, 1935); Beekeepers Item, vol. 19, No. 7, pp. 273-80 (July, 1935); Bees and Honey, vol. 16, No. 8, pp. 255-60 (August, 1935); Gleanings in Bee Culture, vol. 63, No. 7, pp. 395-401 (July, 1935); and in ABC & XYZ of Bee Culture, 1935 Edition, pp. 452-456; also described in U. S. Patent No. 2,070,171, Feb. 9, 1937.

Filtration of Honey, by R. E. Lothrop and H. S. Paine, in Gleanings in Bee Culture, August 1941, p. 485.

Retention of Moisture in Honey (Hygroscopic Properties of Honey), by R. E. Lothrop, in Amer. Bee Jour., June 1937, p. 281; and in Gleanings in Bee Culture, Nov. 1937, p. 664.

Utilization of Honey in Commercial Baking and In Other Industries, by R. E. Lothrop and L. H. Bailey, in Amer. Bee Jour., Feb. 1938, pp. 54-57.

Honey in Commercial Bread Baking, by L. H. Bailey and R. E. Lothrop in the Bakers' Technical Digest, Aug. 1939.

Colloidal Constituents of Honey, by H. S. Paine, S. I. Gertler, and R. E. Lothrop, in Industrial and Engineering Chemistry, January 1934, pp. 73-81.

Diastatic Activity of Some American Honeys, by R. E. Lothrop and H. S. Paine, ibid., January 1931, pp. 71-74.

(Continued on page 637)

Should We Medicate Bee Food?

By John DeBurgh Leake

John DeBurgh Leake

We live in rapidly changing times, and our bee microcosm differs not a whit from that greater world of which it forms a part. In fact, if anything, it changes more readily. Like holiday-makers at a modern seaside resort who shriek with laughter when, in a screen souvenir, the bathing attire that was fashionable a few years ago is shown, so the bee-keepers of to-day are apt to be amused at ideas that were freely accepted during the late nineteenth and early twentieth centuries.

The question whether additions should be made to bee food is a case in point. Until quite recently, in the British Empire at any rate, the use of naphthol beta or one of the proprietary preparations in syrup and candy was held to ward off both varieties of f. b. Nowadays, few adherents of this theory are to be found.

At a later date, a vogue arose for adding vinegar to bee syrup, on the ground that the acid hastened inversion and discouraged or prevented granulation. Once again, this idea has been rejected. Carefully conducted experiments have shown that the inversion of syrup containing vinegar seemed to be more troublesome to the bees than the inversion of syrup from which vinegar was absent.

Many authorities still recommend the addition of table salt, in the mistaken notion that it gives to the syrup the same mineral content to be found in honey. A little consideration of the fact that honey contains at least twelve different minerals, whereas modern over-refined table salt, being virtually pure sodium chloride, contains only one, should disabuse them of this belief.

There remain two forms of medication which retain the support of many contemporary bee masters: the addition of tartaric acid and of thymol. As regards the former, the objections that apply to vinegar (acetic acid) would seem to apply also to tartaric acid, but I understand that the editors of Gleanings and other internationally recognized authorities state that its use is advantageous, on grounds that it prevents granulation and thus enables the bees to take syrup more freely.

The use of thymol certainly does obviate the development in syrup of yeast and moulds, and therefore prevents fermentation, but we have no certain knowledge as to its ultimate effect on the bees. I have personally conducted experiments designed to discover whether it had any injurious action on the ferments which play such an important part in all digestive processes—the bees' as well as our own—and found that stocks fed on thymolised syrup wintered better and were more generally prosperous than the control hive fed on ordinary unmedicated syrup, though no better than those which were not fed at all, but were provided with food chambers. I have also fed bees in mid-winter with thymolised syrup, and can report no untoward result. Many others report favourably on the use of thymol, including Dr. Killick, the British bee student to whom we are indebted for the idea.

The formula for thymolised syrup is eight grains of thymol (procurable at your drug store) dissolved by vigorous shaking in one pint of very hot water. It is safer to use an earthenware jar, with the cork tied in, than an ordinary stoppered or corked glass bottle, which is liable to burst. The thymol can also be dissolved by continued stirring in a saucepan. One fluid ounce of this solution for every pound of sugar used is added to the syrup.

Dublin Eire.

Reversing Supers Does Help Prevent Swarming For Me

By Ed. H. Wirth

[A somewhat belated P. S. for the "Symposium on Swarming" which came in too late to appear in August Gleanings.—Ed.]

Mr. Grant D. Morse brings up the question, in the July 1942 Gleanings, page 422, whether or not reversing hives, that is, changing supers, in the spring has any value as a swarm preventive measure.

If it is not handled at the right time or in the right way, it might not have any beneficial effects. If it is done at the wrong time, or in the wrong way, it might even stimulate swarming. Also, if it is done without an understanding of the real causes of swarming, it might not make any difference at all.

For me, the swarming season was more or less of a nightmare until Prof. Rea suggested reversing at a meeting of the Long Island Beekeepers' Association. I am a hobbyist, keeping sixteen hives at my summer home at the eastern end of Long Island, plus a small peach orchard, potato patch, and vegetable garden. The only time I have to work there is Saturday afternoons and Sundays, and the place is 90 miles from where I live.

Mr. Morse's third question, "Is it logical?" must be answered first. It most certainly is logical, but to explain it we must go to the fundamentals of swarming.

For years it has been known that there are many causes of swarming, such as old queens, poor ventilation, lack of storage room, and so forth. Any one of these conditions can start swarming, but the basic cause of practically every swarm is congestion.

The generally accepted theory is that as the young bees emerge in the spring they crowd the brood nest. If super room is provided in time the congestion is relieved and the desire to swarm does not occur. That this is nearly correct can be proved by the fact that the addition of supers in time does prevent swarming in most cases.

But it is my opinion that this theory is only 95% correct. I think that swarming is basically caused by congestion **where the queen is.** There is a difference. That difference explains why many hives, even weak colonies sometimes, will swarm when they have plenty of room, young queens, and nothing wanting in the way of ventilation. This would be an explanation of why I have had swarms from colonies occupying only five frames. But those frames were crowded.

When supers are put on a strong hive early enough, the comb builders or housekeepers go up to get them ready for the queen or for the honey flow. That relieves some of the congestion where the queen is. Then when nectar comes in, the bees tend to put it above the brood, in the super that has just been added. That takes the honey ripeners away from where the queen is. If the queen goes up into it, you have the same effect as reversing, excepting that you have three bodies instead of two.

In the meantime, emerging bees are finding their legs and duties down in the brood nest. It takes them only a short while to graduate to other duties, and by the time they are ready to go upstairs to the honey department, the bees that they will replace are ready to go to the fields.

This all results in the sequence that builds up strong colonies ready for the honey flow.

Now what happens when you reverse at the right time, in the right way?

We will assume that the bees have come through the winter in good shape. At unpacking time it is found that the top body is full of brood in all stages, and the queen has gone down and is laying eggs in the bottom body. The fact that she is laying eggs in the bottom body is fairly good proof that the temperature there is satisfactory for brood-rearing. By adding a third body now, you are giving the bees a lot more space to fill and keep warm, and since heat rises, the top body will be the warmest part of the hive. So the queen generally goes up there, and gives you brood now scattered through three bodies. If an excluder prevents her from going up, she might slow up on her egg laying, because the temperature in the lower

body has dropped below the point to encourage it.

When you reverse, the second story is practically empty, and it usually is all good, strong, black brood comb. There is more room than the queen can handle immediately, yet you have not increased the cubical contents of the hive. The temperature in the bottom body being high enough to permit egg laying, there is little chance that the brood down there will suffer unless there should be some abnormal weather conditions.

So now we have the queen with a whole body of nice empty comb to fill. The nurse bees are down below taking care of the brood, for only enough will come upstairs to take care of the new eggs that the queen is laying. There is no congestion there, and still plenty of room for the field bees downstairs. Remember that at the time reversing should be done there are not so many field bees as there will be later on.

At the appropriate time, when supers should be added, they should be given. Reversing is not a substitute for proper supering. When the bees need more room, they need more room. But as the brood in the lower story emerges, and works its way up to the new brood and added super, this leaves plenty of room in the old top story, now on the bottom, for the field bees to rest or cluster. The swarming fever should be pretty nearly over by that time.

The answer to the second question is "yes". With me, reversing does contribute to the honey crop, for it holds back the swarming slowdown, keeps the bees building up for the honey flow, thus maintaining their morale and desire to fill the hive with honey.

The answer to the first question is "no". It does not eliminate swarming. It does greatly reduce the inclination. It cannot be altogether a coincidence that nearly every hive that I have will build cells if I do not reverse, whereas only one or two will build them when I do. Furthermore, when a reversed hive does build cells there are generally only a few, and then mostly high up on the combs, indicating a supersedure rather than a swarming impulse.

Going back to your third question, which itself is made up of several subsidiary questions, the only answer that I can give is from my own observations. These might differ from the experiences of others. With me the queen has to be forced down by the pressure of congestion, whereas she will go up as high as the pile of hive bodies will permit, regardless of the population of the lower bodies.

I think that most of the pollen is stored in the lower parts of the hive because that is the best place for it. Robbers are not interested in pollen. They are not interested in brood. They are interested in honey. So the bees put the most precious treasure in the best protected place, the next precious treasure below that, and next to the entrance, something that is not attractive to the enemies regardless of its value to the colony.

My real answer to the question is to invite you to try it. But, bear in mind that the success of the operation depends upon doing the right thing at the right time. As for me, if I had not tried it and worked out the proper timing, I might have been forced to reduce my holdings to one or two colonies, for without this manipulation I never would be able to take care of sixteen hives in the very limited time at my disposal.

Brooklyn, N. Y.

"Whoever said 'It's th' woman that pays' * * * * Look at those poor drones gettin' kicked out!"

A Fling at the Two-Queen System

By Clarence Tontz

The two-queen system, it appears, runs about the same course as the controlled queen-mating system. Every once in a while some beekeeper tries his hand at the two-queen system and comes up with a pretty good idea until some other beekeeper finds out it isn't.

Nevertheless, the two-queen system, under limited conditions, will undoubtedly come into its own eventually. But it is doubtful that it will ever replace the single-queen colonies in commercial beekeeping.

From a large honey producer in Wisconsin I have before me apiary records of a practical test of the two-queen system conducted during 1941. A review of the record with a few direct quotations is as follows:

The season was an average one; the bees became active on pollen sources after the 8th of April and continued to bring in huge supplies in spite of frequent rains. At no time during the early build-up did the colonies run short of pollen supplies. Fruit bloom commenced about May 5 and on May 12 five strong colonies were selected for division into two-queen units.

At the time of division, the colonies selected averaged 10 to 12 combs of brood. The amount was equally divided, half placed into an extra hive body, several combs of honey added and the remainder of the body filled with empty brood combs. About half of the colony population was included in the upper unit which was raised to a position above the lower two stories. The units were separated by a double-screened false inner cover. To the upper unit was introduced a young queen by the cage method, the lower unit retaining the old queen. Each of the two chambers of brood was given an extra chamber of brood combs to allow for expansion. On May 21 all two-queen units were checked which revealed all new queens accepted save one. This unit had started supersedure cells and later in the season replaced the queen with one of their own.

The tall colony on the left is one of the two-queen colonies mentioned in the article. Its short neighbor was headed by only one queen. However, much more expert help is required to manage two-queen colonies. And labor is no little problem at the present time.

However, as the picture below of a row of one-queen colonies shows, a good queen in a fair season will stack 'em up about as high as any beeman cares to reach!

With the beginning of the main clover flow on June 1 a super of combs was added to both upper and lower units. Then on June 20 the two units were united into one great unit. "Instead of the usual procedure recommended by which the brood is sorted and the young brood placed among the supers, our method was to place all the brood in a position below the supers. It must be remembered that no queen excluders were used at any time during the operation of the two-queen colonies. At the time of uniting, the five colonies averaged from 23 to 30 combs of brood. No effort was made to find the queens as we expected the young queen to become the head eventually."

"During the honey flow supers were liberally added and most of them were filled to capacity. It was interesting to note that when other colonies were swarming furiously (the worst swarming problem in years) the two-queen colonies did not make any attempt whatsoever to swarm."

Better results might have been obtained had the divisions been made a week or ten days earlier. But due to a slight difficulty in securing queens, the work was postponed.

"It is quite obvious by the height of the colonies during the flow that work attached to the care would be hard and difficult. More expert help is certainly required in the creating and management of the colonies. And right now the big problem of the commercial beekeeper is not the price of honey nor containers, but help."

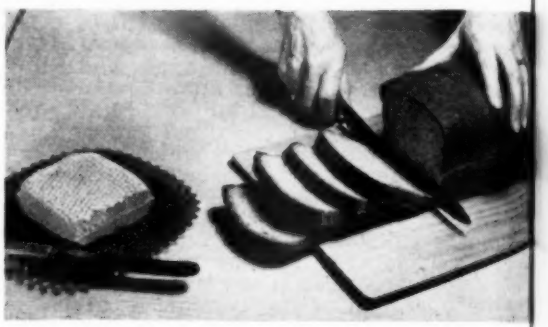
"After a year's experience with but a few colonies, we have reached the conclusion that the wholesale operating of only two-queen colonies is largely a matter of personal choice, and the success or failure of the venture will be entirely determined by one's ability to manage and handle the problems of a two-queen system. We are of the opinion that it will never become universally popular among commercial beekeepers."

Burbank, Calif.

One of my bee yards in a forest of kiawe or mesquite. The hives pictured here are on welded angle iron stands about two feet high for protection against the giant Buffalo toad which was introduced to combat the Japanese rose beetle. This it does efficiently. — Richard Nieman, Honolulu, Hawaii.

Good Eating

By Mrs. Benj. Nielsen



Good eating—this Honey Health Bread.

This time of year—most any time of year, perhaps, but this time of year especially—what is better than the tantalizing aroma of home-made honey bread fresh from the oven? I'll tell you! A crusty, rich golden brown "heel" liberally treated with fresh golden butter and honey. Umm, you really have something there!

"People are queer, aren't we?" Manufacturers kept on refining food products more and more to cater to fussy demands that ingredients used in a recipe produce ever lighter, more delicate results for exacting tastes. This is particularly true of flours, cereals, and sweetenings. More and more nutritious, health-giving parts were eliminated. Now amid the nation wide stir of "nutrition-education-for-victory" we rush to add to our diets the vitamins, minerals, etc., we so busily removed. Whole grain flour, wheat germ, natural sweetening, right on through a long list of health revivers. Now-a-days health-minded and nutrition-conscious folks have learned not to pass up the dusky toned slice of bread in favor of her lily white sister slice. Bread to be good doesn't have to be snowy white—made from a product so refined it has lost its chief health promoting content; nor does it need to be sweetened with an over-refined ingredient. In fact, using honey to sweeten, a little or a lot, as you like, is a leading factor in producing such a tempting looking, aromatic, good-to-eat and good-for-you loaf of bread.

In the Nielsen kitchen, we have worked out a less-than-white variety, chockful of wholesome, nourishing, health promoting ingredients. Remarkably light, it makes exceptionally good toast, either buttered, cinnamon, or French toast. If you prefer a less sweet bread, use less honey than called for in the following recipe—just enough to produce rapid yeast action and aid in producing that rich, golden crust—and you will still have a superior bread from this recipe. For lack of a better name, we call it our

Honey Health Bread

One and ½ cups potato water, potato added to it, 1½ cups luke warm water, 2 packages compressed or granulated yeast, 1 teaspoon honey, ½ cup melted shortening, ½ cup honey, 2 teaspoons salt, 6 cups sifted enriched white flour, 3 cups graham flour, and 1 cup wheat germ.

Put one fair-sized potato, and the water in which it was cooked, through a sieve. This should measure 1½ cups. Add yeast to lukewarm water, stir in honey and let stand while you add the shortening, honey, and salt to the hot potato water. Then sift white flour and measure, reserving 1 cup to knead in dough later, as needed. Measure and add graham flour and wheat germ to the white flour. Mix thoroughly. When potato and honey mixture has cooled to lukewarm, add yeast and honey water to it. Stir into flour mixture. Knead until dough is smooth and elastic, about 10 minutes, kneading in reserve flour as necessary. Place dough in a large bowl, cover closely and let rise in a warm place until doubled in bulk, about 2 hours. Knead down and let rise until doubled in bulk, about 1 hour. Divide dough into 3 parts, mold into loaves and place in well-greased pans. Let rise until doubled. Bake in moderate oven, 350 degrees F., 50 to 60 minutes. Remove from pans at once and place on wire racks, bottom side down, to cool. You will be delighted with the long lasting, fresh keeping quality of this honey bread.

There need not be anything dull or uninteresting about meal planning these days—not with the veritable flood of excellent recipes in all of the

Cheese refrigerator cake.—Photo courtesy National Biscuit Company.

magazines and papers; recipes geared to help you make the most of your food dollars, rout monotony, and keep the family well fed. Fortunately, many of these tested recipes list honey among the ingredients. If they do not, why not try your hand at changing some of them to use honey? You can have a regular "picnic" experimenting and many happy surprises await you. It's fun to cook and to experiment with using honey!

If you are a bit timid, or haven't the time that you feel you need for experimenting on your own right now, try these:

Baked Honey Prune Whip

Two egg whites, ¼ cup honey, pinch of salt, 1 cup sieved, cooked prunes, and 1 teaspoon lemon juice.

Beat egg whites until stiff, then gradually add honey and salt, while continuing to beat. Fold in prunes, cut in small pieces. Add lemon juice. Pile lightly into greased baking dish. Bake in slow oven, 300 degrees F., for 45 minutes. Serve thoroughly chilled. Heap with honey sweetened whipped cream or a honey custard sauce made from the egg yolks.

Honey Chocolate Sponge

One tablespoon (1 envelope) Knox Gelatine, ¼ cup cold water, ¼ cup boiling water, 1½ squares chocolate, or 4 tablespoons cocoa, ⅓ cup honey, 3 eggs, ¼ teaspoon salt, and 1 teaspoon vanilla.

Combine honey, melted chocolate or cocoa, salt, and boiling water and bring to boiling point. Remove from fire. Soften gelatine in the cold water. Add to hot chocolate honey mixture and stir until thoroughly dissolved. Cool somewhat and add slightly beaten egg yolks. When mixture begins to thicken, fold in stiffly beaten egg whites and flavoring. Turn into mold that has been rinsed in cold water and chill. When firm, unmold and pile lightly into sherbet glasses. Serve with honey sweetened whipped cream.

In a temptingly illustrated issue of Nabisco's "Cracker Chatter" which comes regularly to my desk, I was delighted to find a recipe for Cheese Refrigerator Cake containing honey. I have taken the liberty of substituting more honey in place of the sugar they advise using with the egg whites.

Cheese Refrigerator Cake

One-half cup milk, 1 egg, 2 egg yolks, ½ cup honey, 1 teaspoon salt, 2 tablespoons gelatin, ½ cup cold water, 3 cups cottage cheese, ¼ cup lemon juice, 1 teaspoon vanilla, 1 cup heavy cream, whipped, 2 egg whites, ⅓ cup honey, 42 OLD FASHION GINGER SNAPS, and 6 tablespoons melted butter.

Scald milk and add to lightly beaten egg, egg yolks, honey, and salt. Return to fire and cook until custard coats spoon. Place gelatin in cold water,and allow to stand five minutes, before adding to cooked custard. Drain and sieve cottage cheese, add to cooled custard mixture. Add lemon juice, vanilla, and whipped cream. Beat egg whites till stiff but moist, and gradually add the ⅓ cup honey continuing to beat until glossy, smooth and thick. Fold into first mixture. Roll ginger snaps very fine. Add melted butter, and mix thoroughly. Press firmly against bottom and sides of spring form pan. Pour in cheese mixture, chill in refrigerator for six hours and garnish top with OLD FASHION GINGER SNAP halves. Yields: 12 portions.

If you will tint the gelatin mixture with a little orange vegetable color-

(Continued on page 638)

Beekeeping in Northeast Saskatchewan

By Percy H. Wright

Here at Moose Range, Saskatchewan, at the fringe of settlement in the northeastern corner of the province, we are so "up in the world" that at midnight tonight the evening twilight will merge with morning twilight. There will be no real night, for day will never completely depart. Such a location means long working hours for the bees.

In all the districts of northern Saskatchewan where, by some chance, sweet clover is an important crop, beekeeping really comes into its own. In addition, just beyond the margin of settlement there are vast areas where fires have recently passed, and in them the yield from fireweed will equal that from sweet clover, and in some years exceed. The native vegetation helps a great deal, too, particularly willows and wild fruit. However, it is the imported weeds, dandelion and sow thistle, which thrive as I have seen them thrive nowhere else, that do most to supplement the main honey plants—if the bees will deign to look at them in the presence of sweet clover!

The season, of course, is later than farther south in our province and in most of Manitoba. Wintered-over colonies, put away in late October, came out in mid-April, apparently no more hurt by the long darkness and dormancy than are the bees of the northern tier of States by a much shorter period of quiescence. Package bees are usually ordered for the first week in May.

Average dates for the beginning and ending of dandelion bloom would be May 20 and June 15, although in a wet year they will continue to bloom more sparsely all summer. Sweet clover usually comes in blossom during the first week of July, and this leaves a dearth period which can do a great deal of harm if one's colonies are short of stores. I intend to try out sainfoin as a filler-in for the most important stage of the year, from the standpoint of building up the colony strength.

The time from May 1 to the beginning of the sweet clover flow is short enough that package bees are rarely fully ready to take advantage of its abundance. Here it is doubly necessary that there should be absolutely no check in brood-rearing, and beekeepers who fail to give their colonies sufficient surplus for maximum encouragement would certainly rue their neglect if they had any idea what it cost them.

Good wintered-over colonies are ready, and more than ready, for the main flow, and I consider it very desirable to aid the packages by stealing brood for their encouragement. It is a sort of equalizing that we should do as a matter of routine.

I arrived in this part of the famous Carrot River Valley, to settle "for keeps", on May 3, 1938, and had not been here more than a day or two when I realized the beekeeping possibilities. I ordered two packages, which were laid down here on May 17. After I had installed them, thinking that it might be advantageous to have further colonies that would be strong enough to put away for winter, I ordered two more packages, and they arrived on June 6. One of the earlier packages had lost its queen, and had been united with the other. On June 6, some brood was taken from this colony and given to the new arrivals. Thus I had three colonies in all, all decidedly late ones.

However, that year there was a solid block of 320 acres of sweet clover left for seed, and the corner of this field was within a mile of my home site. Moisture was abundant, and yet flying weather continued almost uninterrupted, with the result that sweet clover bloomed on and on until the blossoms were finally blasted by frost on September 17. That was unusually late, for in most years heavy frost arrives between August 20 and September 1. The farmer who "plunged" in sweet clover seed that summer got nothing out of it at last, for a reason that is not very clear.

The harvest he failed to take would have been mine if only I had had more bees. As it was, from my three colonies I took a total of 750 pounds. I heard a report that a neighbor averaged 500 pounds per colony for a 100-colony apiary, and

that fall I had no difficulty in believing it.

I ordered 50 packages for the spring of 1939. Who wouldn't?

However, it isn't in nature for conditions to remain that good. The chief factor in reducing yields was the scare among farmers concerning "melilot taint" in their wheat, and the disastrously low price paid for sweet clover seed. Acreages were reduced and reduced, until, in 1941, there remained little but scattered roadside stands. The same year was the one in which our area got its first midsummer drouth. Wheat yielded well because it was early but the honey flow was over by July 20. Unfortunately, or fortunately, as one may view it, I had decided that year to sacrifice a portion of the honey crop for increase, and hence divided my colonies in June. The result, from the standpoint of the year's returns, is not hard to imagine!

The young queens, though, continued to lay long after the honey flow ceased, and built up the populations of their hives normally or better than normally, on supers of honey I gave them. Thus I had a very fine lot of young colonies to put away for winter. Wintering was the best ever, only one colony failing to come out alive. Just yesterday (June 18) one of my colonies showed itself in such good shape that I realized more than ever what one can achieve by being really generous to his bees. This colony wintered in three hive-bodies, having been given an extra food chamber, loaded with honey, just before it went into the cellar in early November.

In mid-May I gave every colony another super, as a matter of routine. I should have reversed the brood chambers, but was too busy with other affairs to give the time to it, and so used this method as a quick substitute. There were probably ten to thirty pounds in the corners of the combs in all the supers put on.

On June 18, with the exception of three frames to one side in the lowest chamber, this colony was packed with bees and honey. The fourth chamber was all honey, about half sealed. Dandelions yielded no nectar at all until their bloom was was about half over, and then abundant rains started an unusually rapid flow. The hive contained, in all, perhaps 200 pounds of honey, of which over half would be new harvest.

Here is a colony that has made a surplus that would be considered a full crop in many a good beekeeping area, two weeks before our main honey flow is scheduled to begin at all! If conditions are normal during July and August, how much will this colony give me?

As most of my other colonies are also in good condition, I am all set for the 1938 weather to reap itself.

The spring was not really a favorable one for bee life. Warm weather arrived while the willows were in bloom, and there was a good income of nectar from April 20 to May 5. After that date, unaided colonies scarcely maintained their weight.

A neighbor of mine, whose bees arrived on May 5, naturally has not shared in a portion of the good luck, If they had been fed generously, they would have built up with their usual promptness. On the contrary, they were merely given a starter and left to gather what they could. The result is that on June 15 they are still in the first brood chamber.

I have had an object lesson, more by accident than design, in the importance of providing plenty of stores, whether in the fall or the spring. For all beekeeping districts the first law of apiary management is the same:—Have your harvesters ready for the harvest.

Moose Range, Sask.

HONEY, HONEY, HONEY

An old colored "honey man", used to sing his wares in the streets of Charleston, S. C. This was his song:

Is yo' got honey? Yes, ma'am, I'se got honey.
Is yo' got 'em in de comb? Yes, ma'am, I'se got 'em in de comb.
Is yo' got strained honey? Yes ma'am, I'se got strained honey.
Is yo' got de debbil shoe string? Yes, ma'am, I'se got de debbil shoe string.
Is yo' got de life eva'lastin'? Yes, ma'am, I'se got de life eva'lastin'.
Honey, Honey, Honey.
Is yo' want any honey today?

His name was Ralph Bennett, and before he died he was 90 years old and clairvoyant. He said he could see spirits.—Submitted by H. B. Sellers, Drexel Hills, Philadelphia, Pa.

From the Field of Experience

HALF-WAY BEEKEEPERS
By Emory Ward

It is most unfortunate that such a great number of beekeepers are merely **half-way** beekeepers. It's unfortunate because it inevitably means an alarming loss of possible profit and income that the beekeeper might otherwise enjoy.

Strange as it may seem, a surprisingly large number of even the largest beekeepers often fall into this unfortunate category. Despite the unusually large honey crop which they annally produce, they too, are half-way beekeepers—half-way because they simply do half the job. They don't follow up every advantage and make an all-out effort to make the most out of their beekeeping enterprise.

All too many beekeepers, large and small, seem to be of the opinion that production—and production alone—is the true criteria of successful beekeeping. The way to make the most **money,** they reason, is to raise the most **honey.**

To this end they effectively bend every effort to the single task of producing more and more honey. They follow the very latest and most successful methods of apiary management. They give their colonies almost daily inspection. They buy only the highest quality queens to give their swarms new life and vitality. They do everything in their power to increase their honey production—to make **every** honey crop a **record breaking** honey crop.

Now all of this is very commendable. Modern, up-to-date apiary management is the very first step—and one of the most essential steps—to successful beekeeping. But the trouble is, too many beekeepers stop right there.

Success in beekeeping starts with production. But unlike many beekeepers seem to believe, production—and only production—cannot insure the greatest profit or the greatest success.

Today the modern beekeeper must be more than a mere beekeeper. He must be a merchandiser as well. Honey production is only a part of his job. Fully as important a job is the selling of his crop—disposing of it in the most profitable way.

There are scores of ways in which alert, enterprising beekeepers have greatly increased their honey profits by better merchandising their crop—disposing of it at higher than average prices. Their experiences are frequently quoted in the pages of this magazine. They are as varied and as different as possible, but for the most part they have all been successful in producing extra honey sales and extra profits for some enterprising beekeeper who has had the initiative to put them into effect.

Just to cite one example:

In a small mid-western town, a beekeeper once found himself stuck with an unusually large honey crop on his hands. Because the honey crop was so unusually heavy throughout the entire area, the available wholesale markets were flooded and closed to him.

His only chance was to develop his own markets—to merchandise his own crop and to do it quickly! Right away he started to act.

Loading his car with a full cargo of honey in the smaller sized containers, he drove into a middle-class residential district of the town and began to cover the entire neighborhood house-to-house.

When the lady answered the door, he politely handed her a jar of honey with the remark, "Good morning, madam. I'd like to leave this jar of pure, fresh honey with you. Try it yourself whenever you get the chance and see if it isn't the grandest, healthiest sweet you've ever tasted. You be the judge. I'll drop by next week some time, and if you don't find it everything I've said it is, you won't owe me a cent and I'll take the unused honey off your hands."

Most of the customers were amazed at the unusual offer and accepted. Many considered it so fair and honest that they insisted on paying for the honey right away. Some, of course, refused the offer, but all in all it was immensely well received.

People like to be trusted. The beekeeper was selling them more than honey—he was selling them confidence in his product. And he was so sure of its quality and goodness that he was willing to trust them—let them be their own judge. It was an appeal that seldom fails.

Into a little memo book went the

names and addresses of those who accepted his offer. One week later, as he had promised, he called on these individuals to learn their decision. Naturally it was almost always in his favor and the idea quickly proved its value in extra profits.

But there was even more to the idea than that. On the label of every jar the beekeeper had plainly printed his phone number and his address so that it was an easy matter to reorder when the initial stock was used up. As a result, the beekeeper soon established such a list of regular customers that they consumed his entire honey crop—and brought to him the added advantages of **extra** profits.

The experience of this beekeeper —and the experience of countless other beekeepers—has been that the greatest difficulty is always in getting the merchandising system started. Once it is underway, however, it gains its own momentum and speed. Within an incredibly short time repeat sales start rolling in and success in then assured. At the same time you can see for yourself what **extra** prifits successful merchandising can bring.

So don't let yourself be guilty of being a half-way beekeeper. Don't be content with producing a record-breaking honey crop. Be sure you make a record-breaking profit on it by merchandising that honey crop effectively.

New York, N. Y.

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BETTER PICTURES
By John Conner

It seems to be a popular idea of ours to consider today's accomplishments as just about final and to look back upon the results of the past with a certain amount of disdain. This may be a good attitude to assume if we know that we are advancing in what we are doing but as a fixed policy we are fooling no one but ourselves if we continue it blindly. Often out of the past comes a challenge to us of today that, if we recognize it, will cause us to redouble our efforts before we have progressed as far as we thought.

Such a challenge comes to us in the form of a photograph of L. L. Langstroth, taken by E. R. Root almost fifty years ago, which appeared in Gleanings on page 414 of the July issue. In this day of the highly developed camera it may come as a shock to our pride to have a fifty-year-old picture came along and show up the average of our current crop of photographs by contrast of quality.

This contrast becomes even greater if we pause to consider for a moment the type of equipment and the trouble necessary to take the picture in the first place. The camera most certainly was a large wooden affair using glass plates and fitted with a slow lens. The shutter, if it consisted of more than momentarily removing and replacing a lens cover, was a big bulky affair operated by a rubber bulb. A tripod was probably used and the procedure of taking the picture not only required time but infinite patience and skill in focusing, adjusting and manipulating the whole apparatus.

Despite all obstacles however the results were often very good. There was a clarity, detail and perspective that is too often lacking in our present work. Some of these old pictures seen almost to vibrate with life and to them we owe much for the story they still tell so well, especially if, as in this incident, the subject is one of historical significance. If it had been our good fortune to have been permitted to witness the taking of this very picture we could not have recalled the details as vividly and as well and as permanently as the camera has done this for us.

This point that we are apt to overlook is that far from being finished history is still very much in the making. Many of the pictures being taken today will become increasingly valuable for the record with the passage of time. Especially will this be true if we use more than casual thought in the selection and composition of our subject. Above all we must not allow ourselves to believe that to secure good clear pictures we must have an expensive Super-De-Luxe camera with a lot of trimmings, as such is decidedly not the case. Such equipment has a very definite place in the hands of one trained in its use. It is fortunate that most of the subjects likely to be chosen by the average beekeeper-photographer are technically not difficult and can be taken by the common types of cameras, with excellent results if reasonable care is employed.

The beekeeping industry could be rendered a valuable service if its editors would strive through educa-

tion and practice to raise the present standards of pictures now generally used. How to take better beekeeping pictures and how to enlarge from portions of pictures already taken to make more attractive potographs for publication is a matter upon which too little has been done and one from which we can hope to benefit much. We should become more picture conscious. What do you think?

Caldwell, N. J.

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THE BOTTOM CRYSTALS CAN BE LIQUEFIED

By Edwin J. Anderson

Any beekeeper who has bottled and sold honey has noticed that heated honey has a tendency to crystallize slowly and unevenly. Crystals generally form on the bottom of the jar first. The crystals are large and coarse and may often be seen clinging to the sides of the bottles as well as on the bottom. Unheated honey seldom shows this undesirable characteristic but crystallizes evenly throughout the entire container. Heated honey may crystallize evenly but it is more likely to develop the large localized crystals.

When honey has crystallized in this uneven manner, it seems very difficult to liquefy. The liquefied honey may seem to be clear but upon closer examination, there may often be observed a layer of unsightly crystals on the bottom of the jar. These crystals remain solid until the honey has been heated to a much higher degree or has been heated for a longer period of time than is normally necessary for the rest of the honey. Either the excessive heat or the added time increases the hazard of over-heating or burning the honey. This type of crystallization has, therefore, proven to be a problem and much honey has been burned in an effort to liquefy these persistent crystals.

After trying different ways, the writer found an effective method of liquefying these crystals. The method consists simply of turning the caps tightly on the bottle of honey then place the bottle upside down in a dry heating chamber. The crystals stick fast to the jar and are exposed to the small air space formed by the bubble rising to the top or what is then the bottom of the jar. When a dry chamber is used the top of a jar is always heated first and because it is insulated from the main body of honey this part of the bottle gets a little hotter than the rest causing the crystals to liquefy and flow down with the other liquid honey. The crystals on the bottom become liquid at about the same time as the other crystals and over-heating is avoided. All the crystals generally disappear at temperatures below 160 degrees F.

The dry chamber is ideal for liquefying honey since the heat penetrates the honey slowly and is not as severe in its action as hot water. The dry heat also makes it possible to liquefy honey without damaging labels or the surface of a tin pail. The chamber may be used for rendering cappings and bottling honey as well as for liquefying the crystals on the bottom of the jar.

The heating chamber filled with honey. A thermostat controls the temperature.

The accompanying picture shows a few inverted jars after the honey had been liquefied. One jar which had not been heated was placed in the center of the row just before the picture was taken, and shows the crystals on the bottom.

State College, Pa.

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A METHOD OF PACKING BEES USED IN MISSOURI

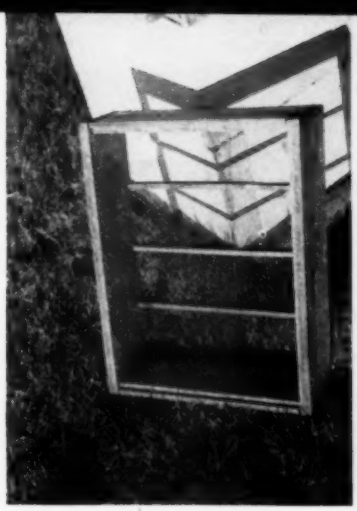
By W. E. Baumgarner

I believe every beekeeper has his pet method of packing bees. Many are similar while others are in contrast. Ideas of what is good wintering are not in accord. It may be of interest to you to compare my method of wintering bees with those of other beemen. I packed my bees late (Nov. 25) last fall. The weather was mild until the first of 1942.

To begin with, getting young bees

No. 1

No. 2



No. 3

for the winter cluster is not much of a problem for me. It follows, then, that it is up to me to see that the bees have food to last until the next flow starts in the spring and to see that they have protection from the extremes in winter weather. As to food, I leave a super chockful of good honey and pollen, together with what there may be in the lower part of the brood chamber. Illustration No. 1 shows one of my hives ready to be packed. I use the deep side of the bottom board all year and in winter reduce the entrance to 4½ in. by ⅞ in. Top entrance is out with me.

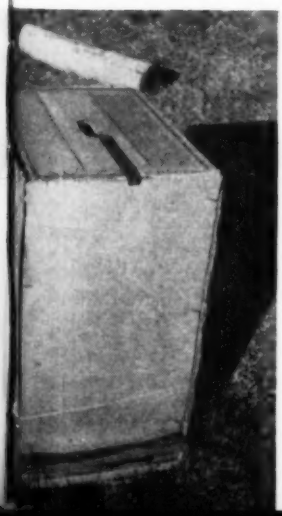
The wood cover (I use no metal covers) is removed and in its place is set a tray of dry sawdust, picture No. 2. This tray is the same size as a shallow extracting super. Picture No. 3 shows the construction of this tray. It has a piece of screen wire tacked on the bottom with three cross members to hold the screen up so it will not close the bee space above the frames. A gunny sack is placed in this tray to keep the fine sawdust from sifting through on the bees.

For side insulation corrugated packing boxes are fine. I cut the boxes to fit the ends and sides individually. There are three thicknesses of this placed together and fastened with wire staples. This gives a pad of insulation for each side, the front and back of the hive, that are easily put on and removed. Picture 4 shows the insulation in place and the inner cover board placed over the tray of sawdust.

No. 5 shows slater's felt wrapped around the hive and folded over the top. The paper extends clear to the ground. The hive is set close to the ground so there is not much need for packing on the bottom. For the top a piece of slater's felt 3x4 feet is fold-

(Contiuned on page 637)

No. 4



No. 5

No. 6

XUM

SECOND GLANCES
By C. M. Isaacson

All the cover pictures on recent issues of Gleanings have been excellent—and the one for September is no exception. Mr. Teale has accomplished a real work.

John Conner summarizes ably much of the known facts having to do with the top entrance and its evolution (page 521). As a summer time proposition, it is in little use in this locality, but some form of upper entrance for winter (with lower one usually closed tightly) is becoming almost universal. It has many advantages.

That a real understanding of bee behavior is essential to truly successful beekeeping should be self-evident —but unfortunately too often is not. O. W. Park's article (page 523) is stored with information in as detailed manner as the space permits—and there have been few articles more interesting to read. No beekeeper can lose by making it a subject of close study; the discussion of nectar reaping is of especial interest. And just a word relative to the statement that worker bees under three days do not take food from the honeycomb, it is doubtless correct, but I think that many of us have seen newly emerged **virgins** do so often.

That the giant bee of India can be handled by those who know the proper procedure is shown by Mr. Thompson's account (page 530). It also shows that they can be a real danger for those who do not. American beekeepers will doubtless prefer Mellifica to Dorsata.

We **are** too apt to under-emphasize the great value of honeybees in pollination, in preference to the more evident honey production (page 532). Mr. Hambleton shows the extreme importance of this work and that honeybees are the only dependable means of accomplishing it. He also gives a viewpoint on why WPB Order M-118 was put into effect, and certainly some of the reasons he gives are plain enough. That a price ceiling of some sort will be definitely set is evident—and no one will dispute its needs—we only wish to see it fair to both producer and consumer. That the extremely rapid rise of honey prices has been hard on many **old** users of honey is true; and they are the ones who will have to be our mainstay when the emergency is over.

That article on Honey Displays (page 434) serves to remind us that we should not neglect any opportunity to publicize honey merely because it is easy to sell just now. We should tell people **now,** when they will listen, to sell later when selling becomes harder.

"The Golden Harvest!" That is an apt and attention-catching name that Mrs. Neilsen uses (page 536). And that honey sweetened apple pie that is described—well, I imagine it will catch more than attention. It sounds **good.**

To the danger to bees from spray and dust poisoning, seems to be added that of ant poisons (page 538). These are probably not used to any very large extent except in certain localities, though, so the danger should not be widespread yet.

"Give the bees a chance" (page 540). Mr. Gooderham's appeal should be echoed and re-echoed. He is certainly correct—sugar may be hard to obtain later on for bee feeding; the only sensible thing to do is to save plenty of honey (and a little bit more).

That is an interesting hint on page 541. That beeswax makes nail driving considerably easier should be of help to many of us who do a bit of "amateur" carpenter work, as well as the professionals.

One point that Chas. Mraz has overlooked in his advocacy of shallow supers alone, for extracted honey production (page 551) is that the standard depth have a definite use in swarm control (especially when Demareeing is practiced) where they are more suitable than the smaller type. And the use of the shallow supers does not always eliminate the need for queen excluders, as many beekeepers can testify.

J. L. Byer's report of cool cloudy weather during much of this year's honey flow seems to have been rather general on this side of the border as well. Plenty of clover but little opportunity for the bees to work it. Just another reason for having colonies **ready** to make use of the clear days when they do come.

The American Honey Institute is not neglecting its work of advertising honey simply because of the present demand—instead, they are putting forth extra effort. We in turn should not neglect the Institute—but support it for our own benefit.

Middle River, Minnesota

Editorials

An open mind on the problems of wintering, not wishful thinking, should be our attitude toward new or old ideas. Wishful thinking strives to keep us in the rut of past thinking and practices. An open mind is willing to find, if possible, a better way.

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Price Ceilings on Honey Not Settled The General Maximum Price Order limiting the prices of honey to the March level has placed considerable uncertainty in the minds of producers, packers and retailers. The Order caught and froze as of March an unnatural spread in competitive honey prices. It is very evident, says Editor Carroll of the Beekeepers' Magazine, that beekeepers "are unwittingly or openly violating price ceilings." They can't wait. They have honey to sell. No one is satisfied and yet Gleanings believes an honest effort was made to set a fair ceiling. Unfortunately, there are several ceilings in some localities that are working to the disadvantage of the industry. See page 628. On account of price cutting at thousands of roadside stands, honey does not seem to fit in this program.

To correct these inequalities a resolution was unanimously adopted at the Ohio-Michigan meeting at Medina on July 7th, and forwarded to OPA requesting that honey be "removed temporarily from the General Maximum Price Regulation subject only to the normal laws of supply and demand as tempered by WPB Order M-118." It was hoped this would correct the injustices under GMPR until a more uniform price schedule could be worked out for honey.

Producers in general are not asking or expecting a price higher than 110% of parity or 11¼c a pound on large lots of best quality honey. But now Congress, considering the President's request for a stabilization of farm products and wages, is proposing a new parity which the President is opposing.

The whole question of all prices with inflation already started is up in the air. It is to be hoped that Congress and the President will be able to evolve a plan that will satisfy the farmers and labor.

Honey Market News Report under New Management Mr. Harold J. Clay, who has edited and developed these reports since they were initiated in 1917 at the suggestion of Dr. E. F. Phillips has been transferred from the Market News Division to the Market Programs Division of the Fruit and Vegetable Branch of the Agricultural Marketing Administration, to give the full official title.

In his present position Mr. Clay will handle honey marketing problems and will continue his present contacts with the War Production Board, the Office of Price Administration, the Office of Agricultural War Relations, the Farm Credit Administration (cooperative activities), and the Bureau of Entomology and Plant Quarantine. Letters and inquiries concerning the marketing of honey and beeswax can be addressed to him, as in the past.

The new editor of the Honey Market News Report is Mr. C. D. Schoolcraft, who until recently was in the New York office of the Market News Service.

The exact reason for this change is not known to us. It is hoped, however, that there will be no impairment in the excellent service rendered beekeepers for which Mr. Clay was so largely responsible. It would seem not the most propitious time to make a change of this sort and with all due respect to Mr. Schoolcraft, whom we welcome into the brotherhood of beekeepers, Mr. Clay has no peer in his particular field. Had it not been for the mass of information that he has accumulated on honey marketing, it is doubtful that the War Production Board and other agencies would have had the basis upon which to promulgate the various orders that have had such a direct bearing in maintaining a sound bee culture during these troubled times.

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Bees help Beat the Submarines Shortage of boats for the movement of nitrogenous fertilizer from South America is endangering our big food supply for the armed forces. Bees, untold millions of them, can play an important part

to help win this war. Worn-out soils cannot produce maximum crops. Legumes, such as sweet clover, alsike clover, red clover, etc., are America's greatest soil builders and are needed now as never before in view of a severe shortage of artificial fertilizers.

According to U. S. government statistics an acre of sweet clover plowed under on May 15th, in Ohio, is worth twenty loads of manure. However this practice prevents the production of seed, an important item in the reseeding of the fields for the coming season. Therefore, every precaution must be taken to save our clover seed industry and increase the total yield where possible.

Legumes, to produce seed, must be pollinated, and this is done largely by the honeybees. Bees in sufficient quantities can help beat the submarines and help provide the much needed nitrogen for our farms which in turn produce food for our fighting forces. Government experiments conducted under the direction of Dr. W. E. Dunham, Ohio State University, show that when bees are provided in sufficient quantities to properly pollinate the clover blossoms, the yield per acre is increased from two bushels to over ten bushels per acre.

Bees perform an all important part in our over-taxed food program.

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Unfavorable Season for Beginners Unfortunately the season or 1942 has not been favorable for beginners in beekeeping, especially those who started with packages of bees. At best it is difficult enough for beginners to get started and to keep going right. Some may begin beekeeping without a knowledge of the principles that govern success and when difficulties arise they fail.

During a favorable season practically any one who knows enough to put on supers at the right time can secure at least some surplus honey. However, when unfavorable conditions arise knowledge and experience are needed to bridge this gap.

Due to the demand for honey to help supply the needed sweets a large number of novices launched out into beekeeping this season. The industry needs more bees and more good beekeepers. The shiftless and careless class are a menace to our industry, and, if beyond help, should be discouraged, but the aggressive, intelligent beginners should be encouraged.

There is an opportunity at present for experienced beekeepers to assist those in the beginner class who may need help. This is our patriotic duty. Our country needs more bees for pollination. At present, according to the best data available there is only one colony of bees for each (approximately) 250 acres. And more honey is needed to help supply the demand for sweets. In 1941 the estimated honey crop for U.S.A. was 206,591,000 pounds—less than two pounds per capita. It is apparent that our industry is, as yet, in its infancy.

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Bees in Some Areas May Need Sugar At present (this is Sept. 10) some beekeepers with insufficient honey for winter stores on hives are wondering if their bees will store enough honey this fall to carry them through the winter. In parts of the clover region the crop was light and brood chambers as well as food chambers are not as heavily stocked with honey as they should be at this season of the year.

Some clover regions are favored with a fall honey flow while others have little if any fall honey. Some commercial beekeepers in clover regions where fall honey is scarce have moved their bees into regions where goldenrod and aster are abundant. This appears to be a sensible move. Populous colonies moved into a good goldenrod location should fill up for winter and perhaps store some surplus as well.

It is to be noted that copious summer rains which interferred with normal secretion of clover, have brought on a rank growth of weeds and plants, some of which yield nectar. For example, heartsease, during a wet season like this one is found among soybeans and is now yielding nectar. It seems that the old "law of compensation" may operate this year, to the advantage of some beekeepers, at least.

However, in regions where bees are light on stores and prospects for fall honey are not promising it will be necessary to feed sugar to save the bees.

A letter dated Sept. 8, 1942, from Charles A. Reese, State Apiarist of Ohio, contains some heartening news regarding sugar for bees. We quote the following:

Many beekeepers are beginning to be somewhat worried that they will not have

sufficient stores for winter, and the ten pound allowance will not be sufficient to carry them through. Last week we discussed this situation with the State officials in charge of sugar rationing, and we were assured that it is the desire of the WPB that bees should have all the sugar required beyond the allowance now given, and beekeepers who are in need of same should immediately contact their local board who, in turn, would place their request for additional allowance before the proper authorities and it quite likely would be granted. At the same time, they asked us for a survey of conditions over the State as well as the privilege to check against our records to ascertain if the request was legitimate, and the sugar, if obtained, would not be put into other channels. They advised me that any individual who has one or more colonies of bees is entitled to the sugar. So if you receive any requests for information as to additional sugar than the ten pound allowance, advise the parties that to obtain the same, they must make their requests through their local rationing board and register as an industrial user. Arrangements have been made to have the sugar available immediately, as soon as the request is granted.

It seems likely beekeepers in all states who really need sugar for bees should be able to obtain it. Our government recognizes the value of bees for pollination and should be interested in perpetuating our industry.

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Honey Plants that Furnish Rubber Among the plants that are listed as possible sources of rubber are milkweed, dandelion, and goldenrod. Now that the rubber shortage is so acute in the U.S.A., the Russian government and the U.S. government have been exchanging seeds. Russia has been sending the seeds of the kok-sagyz, the rubber-bearing dandelion which, it is claimed, provides most of Russia's rubber. It is well known that dandelions thrive in this country in many localities, and if this were a good source of rubber, the amount of dandelion flora would be vastly increased in spite of the fact that the dandelion is a nuisance on most of our lawns.

Again, it appears that milkweed, once regarded as a noxious weed but an excellent honey plant where it grows, also may be a source of rubber. It is being grown extensively in Michigan, not because of its possibilities along the line of rubber, but more because it furnishes a very good substitute for "kapok" floss formerly imported to this country from the far East.

The milkweed floss is being used by the Navy as a substitute for cork. It is very light, and when it is worked into clothing of sailors it makes a buoyant suit and serves the double purpose of warmth as well as a life-preserver in the water. One pound of milkweed floss is said to have sufficient buoyancy to sustain 50 pounds weight after 48 hours. A life jacket of two or three pounds of floss will hold up a 150-lb. man. It is claimed that milkweed also furnishes several other products including material for plastics, cellulose, oils, and chlorophyll.

The Mexican Guayule

There is another plant which has been imported from Mexico and is being grown in an experimental way, called guayule. This is a Mexican shrub which yields natural rubber. The U. S. Dept. of Agriculture has taken over the Salinas land and experts of the Forest Service are sowing 22,000 pounds of guayule seed in 750 acres. This should produce enough seedlings to plant 70,000 acres this fall and next spring. Rubber can be obtained from these plants in from two to four years.

Arthur J. Mayer of California when he was here (see page 541 September issue) spoke of the immense acreage of the guayule now being grown in Salinas, Calif. In the illustrated section of the Los Angeles Times for Sunday, July 5, are pictures which show what is being done with it. The picture of the plant would indicate that it may be either a pollen or a honey plant. Mr. Mayer has promised to investigate and will let us know.

Regarding dandelions, the quality of the honey while excellent, is rather strong, and can be used only for manufacturing purposes. However, milkweed yields a very fine quality of light, excellent flavored table honey, the equal of any clover or alfalfa. Beekeepers in Michigan located in such territories have no trouble in selling that honey at the highest price. But here is one factor that stands out. If there is a dandelion in Russia that furnishes the bulk of Russian rubber, why could it not furnish a large quantity of rubber for the U. S. ? As explained above, the Russian and the U. S. governments are experimenting in the exchanging of seeds with the idea of developing rubber and other products made scarce at the present time because of the war.

It appears that the Russian Government a year ago tried to get Uncle Sam to grow this Russian dandelion in this country but our Uncle did not see as did Russia that there might be a shortage of rubber.

From North, East, West and South

NORTHERN CALIFORNIA, Sept. 4.

Weather: We do not expect a great variety of weather at this time of the season. We have little or no rain from early spring to October and often later. Higher up in the mountains a thunder shower is an occasional visitor. Our nights here in the Bay Region are cool.

Here in the Bay Region we have a different condition from the usual honey condition of the state. This region has an estimated large number of beekeepers each owning from 5 to 25 colonies. The writer would put the number, including those of San Francisco County at 7,000 or 8,000 colonies. This is a moderate estimate. Our honey flow comes early in winter and continues a slow flow to June. From that time on bees must depend on garden flowers. The amount of honey produced from these flowers would surprise the average beekeeper. Our extracting season is over in June and if it were not for this continual flow from garden flowers, tho light, many bees would starve. Beekeepers have learned to leave plenty of honey on at the time of extraction and the result is bees are usually in good condition, with plenty of brood throughout the entire season. The period of no brood-rearing is exceedingly short.

Condition of Bees: Taking our territory in general we have had fewer complaints of Buckeye and spray poisioning than in any year for the past five years. While the crop is light in some districts there have been no reports of starving bees. Beekeepers are beginning early to requeen and get their bees ready for winter quarters.

Beeswax is still in demand for war purposes and beekeepers are urged to cull all their combs closely, save all bits of comb scraped from frames, and cut the cappings deeply in extracting. Beeswax is selling around 40c per pound. Beekeepers are being urged by the State Asssociation to send their "slumgum" left from the rendering of combs to the larger wax-rendering companies. Much additional wax can be thus recovered.

BEEKEEPERS IN ACTIVE WAR SERVICE: Dr. J. E. Eckert, Associate Apiculturist of the University of California, and H. M. Krebs, State Bee Inspector, whose first interest is the beekeeper, realizing that many of our larger outfits are run by young men well within the draft limits, are doing all they can to see that the bees of all such are cared for in their absence. They have consulted Major Howard Witten, of the State Selective Service, Sacramento, in regard to occupational deferment of those engaged in essential agricultural Industries. Briefly, Major Witten stated that our first duty in time of war is our country. The Selective Service Act does not recognize any blanket deferment for any branch of industry, regardless of how vital to national defense it may be. Still there may be a chance for a beekeeper through his local draft board. Here is another argument in favor of organization. **Band together and help each other.**—Cary W. Hartman, Oakland, Calif.

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SOUTHERN CALIFORNIA, Sept. 1

Weather: Today finds Southern California basking in ideal fall weather. We can not point to the "Frost upon the pumpkin and the fodder in the shock," but otherwise with the coolness in the atmosphere and the shortening days it begins to feel very much like the beginning of the fall months.

With the exception of a freak thunder storm or two that came suddenly upon small sections of the south no rain has fallen in Southern California during August. These sudden showers are usually confined quite closely to the mountainous sections and it is only occasionally that they reach into the valleys or farming parts of the country. Cool nights and high fogs are common, the fog often continuing well toward noonday.

Sometimes we get a nice rain during September which lays the dust and freshens things nicely. But there are serious drawbacks to these early

rains. Alfalfa-hay as well as beans are still being harvested and they are always damaged if any rains fall before they are under cover.

Market: The market for both honey and beeswax remains firm with a good demand for both. Honey from 10½ to 12c and wax from 40 to 42c.

Miscellaneous: Migratory beekeepers, and they seem to be in the great majority in our part of the country at this time, have their bees in good shape for the winter. Equipment is kept in good order and a much closer touch with colony conditions is maintained than is usually the case with the stationary beekeeper. There is always a much greater loss from queenlessness, moth-eaten combs, and other causes brought on by neglect, in those apiaries that remain the year round on the same locations. Where bees are moved several times during the season the beekeeper keeps in much closer touch with the condition of his colonies. Disease is well under control with very little complaint from that source.

While the price of honey is up considerably over that of one year ago, there seems to be little activity to buy bees. Labor is hard to get as the high wages paid in all preparedness and defense work has attracted most of the available men.

Much of our so-called bee range in Southern California is very dry at this time. Many of the honey-producing plants and shrubs made very little new growth this season. Grass that grows everywhere in seasons of abundant rainfall is almost a minus quantity this year. Fortunately we have few forest fires to destroy the bee ranges for years to come. Particularly does this apply to the wonderful black sage ranges we once had in Southern California. Black sage ranges near the writer's apiaries that were burned over some thirty and forty years ago have never come back to their former value. We try to console ourselves with the thought that agriculture and horticulture, with their fields and groves of such crops as beans and alfalfa, oranges and lemons, have in a measure come into the picture and to a certain point replaced the loss of the crops formerly produced by the natural plants and shrubs that have given way to the fire and the plow, thereby enabling Southern California to produce in totals honey crops very much in keeping with the crops of the early days. —L. L. Andrews, Corona, Calif.

TEXAS, Sept. 2.

Weather: August was very agreeable to the bees. A sufficient number of plants were in bloom to keep the bees busy yet not enough to afford any surplus. Reports from many points in Texas indicate that a normal crop of honey was made. Northern Texas reported a heavy spring yield but the time is not yet for their fall crop. Several beekeepers in the Southwest report that they sold their spring honey at a very good price. The amount which was received from the wax obtained plus the wax that was recovered from prior production gave the beekeepers a normal return in money for the year. Beekeepers everywhere are making preparations for increasing their bees and producing more honey and wax in 1943.

This month ended with one of those disappointments that Nature imposes on humanity. To one who has wondered why trees grow in one place and not in another or why flowering plants are limited to certain zones, the conclusion comes that Nature says: "Thus far and no farther". The morning of August 30 saw Southwest Texas in as beautiful condition as it has ever been. A Gulf storm struck the Texas coast at two A. M. It reached the San Antonio area about 8:30 A. M. At 9:20 the barometer had reached the lowest point ever recorded in this section. Everything went to pieces. From that time on for about two hours the storm was very heavy but shortly after noon it had stopped so that it was possible to work out of doors. Almost every mesquite tree in the country was torn to pieces. Many of the live oaks suffered. Farm buildings are scattered all over the farms. There were no electric lights or telephones for two or three days even in the cities. Those interested in bees immediately went to see their colonies. Few were hurt but almost all had lost their tops and inner covers. This loss of tops and inner covers was a most peculiar thing and was observed here on at least twenty hives. At the point of extreme low barometer the outer cover accompanied by the inner cover lifted up about two feet in the air when the wind carried them to considerable distances. A similar thing was ob-

served in buildings. The window panes went outward when they exploded and roofs were torn off the side away from the wind. Outside of a few hives there was no damage to the bees yet the beekeepers lost heavily in piled up equipment and out buildings. As yet the reports are so meager it is impossible to get anything definite.—H. B. Parks, San Antonio, Texas.

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ARIZONA, August 31.

Weather: Locally we have had considerable cloudy weather, but little moisture. Newspapers have reported extremely dry weather for most of the State. Some areas have reported not a half-inch of rain fell during July and August. Today the sky is clear and the last few nights have been cool enough to feel that fall is not far off. Generally we have little rainfall through September and October, but there are of course exceptions.

Honey Crop: The crop this spring and summer through the Salt River Valley is reported to have been better than for the past several years, while producers in the mesquite and catsclaw areas in many locations did not fare so well. The crop was very poor compared with last year. This can be charged to cool nights in the mesquite-catsclaw area in many places. I feel sure the producers did their best, but in the end we have little control over our production.

There has been some confusion as to what honey should sell for. However, many I have talked to feel that "Parity" price should be fair to both producer and consumer, considering the wages being paid today in all Government and contract works throughout the State. However, there is some indication that the powers that be in Washington may step unfairly on the producer. The producers are going to face hardships in securing help to care for their outfit.

Miscellaneous: Just a few more words regarding help in harvest time. Most producers harvested their crop without too much difficulty this season, but here we see the help problem becoming more serious each month. Already it has been suggested producers petition the Governor or school boards to release High School boys a short time to help with harvesting crops. I have already heard of some producers being drafted, and it is likely more will be later.

Market: I believe most of the honey is already out of the hands of producers in this area. With many here in Southern Arizona the crop was short and there was little to dispose of. Most of the honey was marketed at from $10.20, $10.50, $11.00, and $12.00 a case according to grade. These prices were F. O. B. shipping point. There has also been a good demand for beeswax.—Leslie Wedgworth, Oracle, Ariz.

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MONTANA, August 27.

Weather: June was a month of almost continual cloudiness and rain. On the 28th the unfavorable weather broke and we have since that date had continual dry hot weather and cool nights.

Honey Plants: Seemed in fine shape to produce when the good weather came but the flow has been moderate and the crop will size up just fair, from all reports we have had in this part of the State. On August 13 and 14 we had pretty severe frosts in this immediate locality and only in the last few days has the flow picked up again.

Honey Market: For several weeks before the new crop was ready for extracting there was almost no honey to be had, and many called asking for it. There has been a good demand for honey in small containers by the stores, but it seems that many think honey prices unreasonably high at 14 to 15 cents per pound in tin and glass (retail).

Miscellaneous: I would like to know if beekeepers in other parts of the country are plagued by their backs giving out. The truck has been a godsend in many ways, but to commercial producers who have to do a lot of moving the truck has caused many sleepless nights while bees were being moved.

Bees are unusually cross all over this intermountain country and I wonder if the stings all too frequent are a cause of much of this trouble. A commercial producer with several thousand colonies tells me that neither himself nor his help can stand it to handle full-depth supers of honey for weeks at a time, so they adopted a shallow super. Sometimes we feel we would like to swing an axe for a few days to enable us to get rested up.—T. J. Rowe, Arlee, Montana.

KANSAS, Sept. 5.

Weather: During June there was an abundance of moisture. For the northern half of the state there was too much rainfall and too little sunshine. July, as usual, was somewhat dry. In August there was normal rainfall. On the whole, the summer has been what might be termed a cool one. The third week in July there were a few days when the maximum temperature was from 100° to 103° F. The last week in August, the highest temperatures were in the low 90's. So far this year, rainfall has been above normal. Up to September 1, most areas in the eastern half of the state have had the total normal rainfall for the year. Rain which began on the 2nd of September and continued through the 4th has produced better than four inches, whereas the normal rainfall for the month is 3.44 inches. The weather cycle at the present time evidently is in the swing toward an excessive wet condition.

Condition of Bees: Where colonies were supplied with sufficient amounts of food during the spring, they built up to peak strength just previous to the major honey flow from white clover and the sweet clovers. Everything progressed nicely in a strong honey flow until the extremely wet, cold, cloudy weather came during the last half of June, which terminated the honey flow in eastern Kansas and on into southeastern Iowa. Weak colonies that did not have a chance to build up for this early honey flow have now built up for the smartweed honey flow during the last half of August and first part of September. The colonies that had the peak strength in June do not have it now, whereas the weaker colonies that were slow in building up at that time are now the colonies with the peak strength for nectar gathering. This latter condition will enable colonies of bees to have large populations to go into winter and will require large amounts of stores to carry them through until the next honey crop. Where the colonies are headed by one-year-old queens, it means they will be somewhat worn out and are apt to be superseded next spring at a time when such bee behavior is not wanted. Beekeepers who are appreciative of these facts will requeen during September and early October.

Honey Crop: Beekeepers with strong colonies the first of June harvested an average honey crop from the sweet clover,or a combination of white clover and the sweet clovers. In the southern Arkansas River Valley, nectar secreting conditions have been favorable all summer and a continuous honey flow has been in progress since the latter part of May from the sweet clovers, alfalfa, and, at the present time, smartweed. There is a smartweed honey flow on in northeastern Kansas. At Manhattan the flavor of this honey is extremely mild, and some colonies now have as much as 75 pounds surplus of this honey, with the honey flow continuing

Honey Market: There has been a more or less steady demand for honey in quantities of five pounds, or greater. The market probably will not become active until later in the fall.

Miscellaneous: There has been much interest on the part of many people to begin beekeeping with one or two colonies to provide a source of sweet through honey as a means of supplementing sugar. Some people have expanded their commercial holdings and others have reestablished their holdings as commercial beekeepers.

By the time this article is in press, the Kansas State Fair will have become history, and it will be the last time the Fair will be held for the duration of the war. A great many of the state fair buildings, equipment and grounds in midwestern states are being used or will be used as army, navy, and airforce training centers. — R. L. Parker, Manhattan, Kansas.

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NEW JERSEY, September 3.

Weather: Last winter was kind to the beekeepers of the state. Losses were low and the spring period favorable. The summer season was not noticeably dry or wet, but nevertheless toward mid-summer there were evidences from many parts of the state as to extreme dryness, especially of the subsoil. During most of August this condition was changed when we ex-

perienced heavy and continuous rains. For the past week or so these have let up and we have enjoyed some of the finest weather that could be wished for. Prospects for a good fall flow look very promising and some nectar from goldenrod and Bidens is now being stored.

Honey Crop: The crop secured so far has been disappointing to most beekeepers, light honey in particular being quite short. At the beekeepers' summer meeting expressions on this matter were very pronounced. The opinion was that this has been the poorest season in 15 years or more. It has also been unfavorable for the establishing of package bees, especially if the packages were received late and were put on foundation.

The bright spot of the picture is that the fall flow, yet to come, is the main crop in many places. Favorable also is the fact that the area giving surplus from the goldenrods and asters is growing in size. It now includes much territory formerly classified as yielding surplus only in June and July.

Miscellaneous: The nature of the honey flow this season serves to emphasize the fact that we really know very little about the factors governing nectar secretion (and how closely this is connected with cash returns). This season serves also to bring out the changes that have been slowly going on, almost unnoticed, for over 25 years. Alsike clover was then credited with being New Jersey's best honey plant while buckwheat also was considered valuable as a fall crop in some areas. Now it is not of importance while alsike is not nearly so valuable as it once was. The other clovers have not taken its place in honey production. Alfalfa, to which the dairy industry has turned more and more in its program, seems to be of no value to us for nectar.

From "man-made" sources such as alsike and buckwheat we seem to be gradually depending less and less and in their places we are expecting more from the "natural" sources such as the sumacs, weeds, and fall wild flowers. The abandonment of many New Jersey farms during the past 20 to 25 years has especially favored the growth of both sumac and goldenrod.

Some of the suburban areas have benefited from man-made activities. Ragweed control with sweet clover replacing it in vacant lots in whole communities together with shade tree plantings of basswood has served to bring a good summer flow to many beekeepers.

A reliable fall flow from "Spanish Needles" occurs along the Delaware River area from Burlington to Salem. This is more properly called the "Bidens" flow. Probably the most valuable of these for nectar are the two bur marigolds, **Bidens laevis** and **B. trichosperma** (these are annuals and inhabit swamps) and the Spanish Needles, **B. bipinnata.** This is an annual also of wider distribution than the preceding. It grows in drier places. Mr. Filmer reports that Bidens are now established along the lower Raritan River swamps. Purple Loosestrife (**Lythrum Salicaria**) is also reported to have yielded honey this year along the lower Delaware, particularly around Paulsboro.—John Conner, Caldwell, N. J.

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MINNESOTA, Sept. 7.

Weather: Our guess of what has puzzled beekeepers most this 1942 season is the weather! We have had too much rain, wind, and clouds; now, maybe nice sunny weather will come for the fall wind-up!

Crop Conditions: A survey of Minnesota beekeepers was made the first week in September, asking several questions of current interest. As to size of the Minnesota crop most producers reported around 50 percent of normal. They reported insufficient bee pasturage, partly because of the plowing under of sweet clover due to changes in the AAA program. The usual Dutch clover regions had an abundance of bloom, but as one producer said, "the bees needed umbrellas"! The cool wet weather seemed to be our greatest handicap. First it delayed bees in spring build-up; they strengthened on the honey flow, and then the late flow proved disappointing. Where bees were strong the cloudy cool weather caused undue swarming, while other bees, nearly starved, were too weak to swarm or gather much nectar. "Never saw a year like this in 30 years of beekeeping," wrote Earl Patten.

Also, this survey showed 5-lb. pails retailing from 69c to $1.10, displaying an unsettled market. But, with

wholesale buyers offering 11 and 12 cents, and a tendency for producers to hold honey longer, these retail prices should level off at close to a dollar.

Honey Prices have fluctuated in 1942 to the confusion of both producer and buyer. We heard that the March wholesale prices were supposed to govern the fall honey prices, but to date actually are not buyers governing honey prices, as usual? The indication is for further price rises following the general trend, and in the end settled by our long-time friend "Supply and Demand". Barring Government action, anything can happen to honey prices before the 1943 crop comes on.

Miscellaneous: Our State Legislature convenes in January. Again, this is an opportunity for those who make the Minnesota beekeeping laws to correct the mistakes in the present law. Our beekeeping laws could be made a topic for discussion at the fall meetings. (Incidentally, the annual steam boiler inspection and engineer fees are an imposition on beekeepers, who seldom use their steam boilers more than 20 to 40 days a year. Such limited use of small boilers at low pressure for heating only, should not necessitate an inspection oftener than once in several years.)—Bruce Morehouse, Monteviedo, Minn.

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WESTERN NEW YORK, Sept. 1

Weather: Copious showers throughout the spring and summer months have resulted in a good growing season. All farm crops are excellent. Many fields of oats grew so heavy that they went down and were very difficult and in some cases impossible to harvest. This is some contrast to a year previous when there was no rainfall between seeding and harvesting of oats and when in some cases they did not grow tall enough to harvest.

Where conditions were favorable for proper pollination and where adequate quantities of bees were present for the work there are excellent crops of fruit. It looks as though the use of bees in orchards last spring shows up better than usual and growers who rented bees in adequate quantities of proper strength are delighted with results.

Crop Conditions: Despite the very favorable weather for farm crops, the white honey crop has been very disappointing throughout much of the state. Reports coming to us indicate that there has been a very satisfactory crop in the St. Lawrence and Champlain Valleys. The rest of the state is very spotted with great variations between yards only a few miles apart.

For the past couple of weeks there has been a very good flow from second crop alfalfa throughout much of Western New York. Buckwheat is also yielding fairly well and many colonies now have from 50 to 75 lbs. of surplus from these sources.

Among farm-kept bees swarming is and has for the past couple of weeks been the heaviest that I have ever known in August. One farmer with about 20 hives told me he had six swarms in three days and we hear of swarms around the country more than we have during the regular swarming season, which occurs here in June and early July.

Prices: Retail demand for honey here is excellent at ceiling prices. We are also receiving many inquiries for large lots. But as the Co-Operative handles all bulk sales these inquiries are forwarded to them.

Miscellaneous: New seedings are excellent and present prospects for clover for 1943 are the best they have been for many years. But early prospects do not mean much, as many months between now and the honey flow may completely change conditions. We always like to count our chickens while they are in the shell. It's a lot better counting. So we are planning and looking forward to a bumper crop which we hope and pray can be sold on a peace-time market in a world that no longer strives to destroy men and things but in a world building for the good of man to the glory of his Maker.—H. M. Myers, Ransomville, N. Y.

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ONTARIO, Sept. 7.

Crop Conditions: At this date it can be definitely stated that Ontario has the lightest crop of white honey in many years. The Provincial apiarist gives an estimate of 40% of last year's yield, but I would place the percentage much lower, judging by reports received from commercial beekeepers. Our own yield is about 25% of last year's

crop, but it must not be forgotten that last year's white honey crop was much above the average. Different factors explain the small returns in many localities, but even when conditions seemed favorable for nectar secretion, little honey was secured. The heavy producing areas north, south, east, and west of Toronto have very light crops. Many apiaries did not produce enough honey for winter stores. But from a point about fifty miles east of Toronto better yields are reported, and still further east in the vicinity of Kingston, Napanee, and other places in that area, a good flow is reported. This good crop area extends north through Carleton Pl., Renfrew, and to points east of Peterboro, and that about covers the good yields according to information available.

Latest reports say that Saskatchewan has a good crop and that Manitoba will have at least as much honey as in 1941, and it is to be hoped that this is true for certainly all the honey produced by Ontario will soon be used up. For many years we have not failed to ship carload lots, but this year our small crop will all be sold from the extracting plant and we are already turning down orders. Without any solicitation in way of making sales, and with no roadside stand or other means of attracting buyers, about 30,000 pounds of honey have left here during the past three weeks or more.

Yields from different apiaries in practically the same locality, vary greatly, and this applies also to the quality of the honey, as the better the yield the better the quality is a rule that rarely fails to be true.

Beeswax will of course be scarce as compared to a year ago, as the bulk of wax from commercial apiaries is secured from cappings. Yield of beeswax will be even lower on a percentage basis when compared with the honey yield, as last year the combs of honey were practically all sealed while this season much of the honey was never capped owing to the extremely light crop with many light supers. Buckwheat has yielded only fair, and judging by the active inquiry of purchasers of this honey, we would surmise that crop is below normal. Feeding bills will be heavy with many apiarists as we personally know of some beekeepers who will have to feed a lot, notwithstanding the fact that they have all of their bees in two full-depth brood chambers.

Sugar for Bees: Present information assures us that sugar will be available for feeding the bees, and in order to get sugar needed, application must be made to the Provincial Apiarist, Mr. Townsend at Guelph, Ont. On his recommendation, the sugar will be supplied when needed, but each applicant will first have to register with the Wartime Price and Trade Board as an industrial user. A document known as "Form A" supplied by the Board must be filled out and forwarded, and then the supplier of sugar will be allowed to supply the beekeepers with the amount recommended by the Provincial apiarist.

Miscellaneous: While the results of this year to the most beekeepers are no doubt discouraging, do not imagine that failures or part failures have not occurred before. Well do we remember the year 1914, 28 years ago, not only because of the start of the first World War, but because of building our present home in that year, and not wetting the honey extractor with white honey. It was a tough experience at that time but we survived the ordeal. Do not forget that prospects are extremely good for next year.

Since writing the foregoing, Gleanings has just arrived, much later in the month than usual. A hasty look over my notes for last month reveals an error either typographical or otherwise. The sentence I refer to is where we are made to say "and without perhaps faulty management" when we, of course, meant to say "with **our** perhaps faulty management." This makes quite a difference in the reading and also in the meaning, as we would not presume to be faultless in anything.—J. L. Byer, Markham, Ontario.

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COVER PICTURE

The unretouched picture of the head of a honeybee was taken to show the particles of pollen in the hair, thus dramatizing the bees' contribution to the war in the pollination of legumes, to restore the soil to enable the farmer to raise food, to feed the army, to beat the Japs!

Quite by accident, the shadows cast by the two antennae create an illusion of slanting eyes suggesting the name "The Mikado". True, the bee needs a shave, but so does the Mikado, —a close shave.

A Symposium

on Methods of Wintering Bees in the North

Conducted by the Editors

(Continued from September)

In last month's Symposium Mr. E. R. Root opened the subject of wintering with a brief review of important factors involved, also some modern trends in the solution of wintering problems. We also had experiences from two beekeepers, one in Minnesota and the other in Washington, both of whom brought out the fact that beekeepers over the country should use methods that meet the wintering requirements of their respective localities.

And may we suggest to experienced beekeepers that they stick to their present methods if they give good results. Do not make radical changes. If you must experiment do so on a moderate scale.

For the benefit of thousands of beginners who have launched out into beekeeping this season a brief review of wintering requirements may be in order. Here they are:

(1) Each colony going into winter quarters should be populous, with a large percentage of young bees.

(2) Each colony should have an abundance of stores of good quality (honey and pollen), properly placed in the combs.

(3) Each colony should have adequate protection from the elements—which, in cold climates may perhaps mean that bees in single-walled hives should be placed in properly constructed cellars, or, if wintered out of doors, should have additional waterproofed insulation and the apiary site should have natural windbreaks.

Now these wintering requirements are the same throughout the North, except in the amount of protection needed. For example, bees in Ohio do not need so much protection as bees farther north, in, say, Northern Ontario, Minnesota, or North Dakota where lower temperatures and protracted cold spells occur.

There are differences in atmospheric conditions, moisture, the amount of sunshine, etc., in the various regions of the North. These differences make the application of the wintering requirements difficult. For example, in regions along the ocean or the Great Lakes where much moisture occurs, the problem of excess moisture within hives during the winter is likely to be greater than it is in regions of the Northwest where the air is dry. This excess moisture in the hive may cause packing or insulating material to become wet, and wet packing is worse than no packing at all.

Upper Hive Entrance.

Many beekeepers seem to be solving the moisture problem with the upper entrance. As yet there are differences of opinion as to where and how this entrance should be made in the hive, but it would seem that some sort of an upper entrance is here to stay and this may eventually involve some change in hive construction. This brief comment on moisture and upper entrance construction may help to clarify future references to these matters in this Symposium.

"Pack Your Bees in Honey and Chaff."

This excellent advice was given by Dr. W. E. Dunham, Extension Specialist in Bee Culture, Ohio State University, in his "Monthly Beekeeping Notes" during the fall of 1940. And may we add that unless an abundance of honey is supplied, the chaff packing will be of no avail.

Dr. Dunham has carried on a five-year experiment to determine the average winter loss of colonies **unpacked** and **packed**, using thousands of colonies owned by those cooperating in the project. (See page 12, January, 1941, for a full report.) The following is a very brief summary of his findings:

Average Winter Loss of Colonies

Winter	Unpacked	Packed
1935 - 1936.....	34.9	17.0
1936 - 1937.....	4.5	2.9
1937 - 1938.....	11.6	8.0
1938 - 1939.....	4.6	4.1
1939 - 1940.....	30.4	12.9

It is apparent from the foregoing that the winter losses during the very severe winters of 1935-'36 and 1939-'40 were heavy. We should add that Dr. Dunham advises packing bees in "honey and chaff" to avoid serious losses which are likely to occur periodically every four or five years.

We might add that in some regions the two severe winters just mentioned were preceded by a late aster honey flow which continued late into October and was followed by cold weather which prevented bees from properly curing or ripening the honey, and consequently the winter stores contained an abnormally high percentage of water which in turn caused dysentery during protracted cold spells, thus causing rather heavy losses, even in packed as well as unpacked colonies.

Packed Colonies vs. Unprotected Colonies in Terms of Surplus Honey Stored

Robert S. Filmer, Associate Entomologist of New Jersey Agricultural Experiment Station, has been doing some work on which he reported in his "Experiment Station Notes" received at this office in February, 1941. We quote the following:

At the winter meeting of 1936 the New Jersey Beekeepers' Association suggested that the New Jersey Ex-

periment Station undertake a study of the wintering problem of bees. This request was prompted by the severe winter losses which New Jersey beekeepers had experienced during the three preceding winters. This study was undertaken in 1937 and has been continued up to the present time. One of the main projects has been a comparison of unprotected colonies versus packed colonies, which has been carried on at the Lebanon apiary. We now have results from three full seasons of this study. During the first season, 1937-38, 10% winter loss occurred in both groups. During the second winter, 1938-1939, no winter loss occurred in either. During the third winter, 1939-40, the packed colonies exhibited no winter loss while unprotected colonies suffered 15% loss. These results summarize briefly the results of this project up to the present where winter losses are concerned. Another part of this project which we are studying is the honey production of the colonies of both groups. The results obtained in honey production show very little difference between the two groups at the present time. The following table gives the essential data of this study:

	PACKED COLONIES		UNPROTECTED COLONIES	
	No. of Colonies	Surplus Honey	No. of Colonies	Surplus Honey
1937 - 1938	22	112 lbs.	18	111 lbs.
1938 - 1939	14	34 lbs.	16	32 lbs.
1939 - 1940	6	103 lbs.	13	107 lbs.

At the present time it is too early to draw definite conclusions from this study. Since the project started we have had relatively mild winters with small winter losses. The 1939-40 winter period showed heavy losses in some sections of the state but much of this loss may be attributed to a shortage of stores in over-wintered colonies due to the near failure or the fall honey flow. The winter loss of 15% at Lebanon Yard is excessive and is thought to be due to lack of sufficient windbreaks in the portion of the yard where a group of five colonies were lost. An attempt to remedy this condition with the use of snow fences is being carried out during the present winter. The fact that no loss was experienced during the past winter in the packed colonies demonstrates the value of packing. It will be noted, however, that up to the present time no advantage can be demonstrated for the packed colonies when honey production is used as a criterion. New Jersey winter loss should be kept at a minimum provided strong colonies with ample stores and suitable wind protection are placed in winter quarters.

As a matter of fact, a number of beekeepers in Ohio and other States in the same latitude (also some farther north) are wintering in single-wall hives with no additional protection in wind protected apiary sites. Some are using only one thickness of building paper around each hive. These beekeepers see to it that each colony is very strong in bees and abundance of stores—honey and pollen—properly placed. By this we mean that the winter cluster is surrounded with honey and especially with full deep combs of good honey directly above the bees, so that, as the cluster moves upward during the winter, as honey is slowly consumed, there is no danger of the supply of honey giving out. It would seem that very populous colonies with a superabundance of good stores properly placed are not easily killed by cold weather.

Since we have mentioned upper entrances in connection with getting rid of moisture within hives we now hear from C. L. N. Pearson, Vernon Dean, Andover, Hants, England, who does not use the upper entrance but has experimented with what appears to be a novel method of expelling moisture from hives during the winter:

VENTILATION IN RELATION TO WINTERING BEES

By C. L. N. Pearson

From the mass of material that has been written about wintering bees, one is forced to the conclusion that some kind of upward ventilation is essential for the well being of any stock of bees during the cold period. The lower entrance, that may serve all purposes well enough during the active season, seems quite inadequate during the colder parts of the year when the bees are powerless to bestir themselves sufficiently to rid the hive of harmful moisture and bad air.

From what has been written about upper-entrances pure and simple, it would appear that the chief purpose of these is not so much an exit for bees as an exit for moisture. And the whole arrangement seems clumsy and not well adapted to an ordinary hive.

In view of these facts I made what I think was an original experiment last autumn with 30 stocks of bees wintering in a low lying and damp but well protected yard. Although well screened from wind and apparently warm, bees never wintered well

in this yard. The combs were almost invariably mouldy in the spring.

The Experiment

Late in the autumn I unsealed the inner cover and wedged each one up **one-sixteenth of an inch** with slips of wood on the South side. This gave an exit for foul air and moisture on three sides of the upper rim of the hives to an extent in the aggregate of about 2 square inches. I next heavily padded the tops of the inner covers with newspapers but without overlap to hinder the upward ventilation. I reduced the ordinary entrance to the small space of 1" x 3/8" with a view to reducing draught.

Results

Fortunately for the experiment, the winter of 1939-40 was one of the most severe on record. Bees died in thousands all over the country—possibly half the bees in England died but the bees in this particular yard not only all lived but all came through to spring in perfect condition and consumed less than their ordinary quantum of stores. In addordinary quantum of stores. No combs showed signs of mould.

The Reason

While I still agree with the late E. W. Alexander of New York State that no experiment with bees is of much value unless conducted with at least 100 stocks and over a series of years, the results of the above arrangement are at least remarkable. Here was a yard, formerly a winter death trap, for the first time wintering its bees 100% strong and that during a winter most severe in living memory.

Now supposing for the sake of argument that this way of wintering solves the problem, then I suppose the reasons for its success might be put as follows:

(1) Foul air and moisture escape at the top and not from any one isolated spot, as with a tube that may or may not leave pockets of stagnant air in remote corners of the hive.

(2) The moisture escapes direct without being caught by packing material and doing worse damage by turning to ice.

(3) Heavy packing was still retained where it did most good by hindering the escape of heat by convection.

The very small entrance might be a danger spot if it became blocked with ice for a prolonged period, but even so the upper ventilation might be sufficient for bees using less air in a state of semi-suspended animation.

Even then the question arises why are such sagacious insects so anxious to seal their upper covering when by saving themselves the trouble a few chinks might better preserve their lives. Perhaps they don't know everything yet and are in a state of evolution like other creatures.

Mr. Pearson's method of getting rid of excessive moisture in hives during the winter apparently works well in England. A few beekeepers in this country have tried out somewhat similar methods, with success.

We next hear from P. W. MacNeill, Moscow, Pa., who has some ideas on hive entrances, moisture, and whether or not a hive should be level or tilted forward.

If the forward slant of a hive is a bad thing when the entrance is at the bottom it may not be such a bad thing, or even a good thing, when the entrance is near the top. I imagine that very possibly a forward slant creates a pocket of air at the upper rear of the hive, moist no doubt but not too cold, which acts as a brake on all major air-currents and assists the bees in their own efforts to govern air exchange. It is natural for us to think of warm air as moving upward and as being more subject to loss from the top of a hive than from the bottom, and we are doubtless right about this in a general way; but in our thinking perhaps we exaggerate the degree of this loss unless careful to remember that when we say "top entrance" we mean not actually "top" but "near-top." If the entrance is in the front wall and the hive is tilted forward there is not nearly the exchange of air that would take place if the entrance had the form of a pipe through the roof.

On my back-yard scale I have never succeeded in making observations on comparative wintering which were satisfactory, much less scientific. Using a bottom entrance my bones report a feeling that I have done better whenever I have provided for the escape of moisture into the top packing, in pursuit of the ideal worked out to such a fine art by Mr. Grant Morse, of New York State. But my mind is not at ease about it. Moisture in the packing must draw heat; and though it may be the least of evils, it is not good. I continue to wonder whether the amount of heat that is absorbed by the moisture in the top packing might not be sufficient to carry the moisture out of the hive altogether if it were given a proper outlet through a top entrance.

Talks to Beekeepers

M. J. Deyell

Great Variety of Conditions

Beekeepers in regions where little if any surplus honey was secured this year are likely to say that this has been a very unusual season. It has been, but if we could actually know the records of past years we likely would find seasons that were somewhat similar to this one. Isn't it a fact that during a good season we sort of forget the poor seasons, and, for the time being, wonder how there could ever be a poor one? Then, when a poor honey year comes along we may begin to wonder if the good seasons will actually return. As a rule, one extreme follows another. And so, next year may be a banner honey year. We must be optomists during these times when bees, honey and wax are so much needed.

Give Bees Proper Care This Fall

The foregoing leads up to the necessity for intelligent apiary management this fall. Once in a while a beginner wishes to know if he can divide a strong colony in the fall. The answer is that such is possible **but not advisable.**

I recall a few years ago when a beginner in this area, during late August, divided a normal colony into five parts, giving the queenless parts young laying queens. Of course, all of the divisions died during the winter.

Unite Weak Colonies

Weak or understrength colonies are likely to pass out during the winter. All sub-normal colonies should be united before cold weather arrives. This uniting may be done by placing one hive of bees (with bottom board removed), on top of another colony and placing one thickness of newspaper between the hives. A few small holes should be punched in the paper, using a pencil, to admit air into the upper hive. The bees will unite gradually after gnawing the paper, and will dispose of one queen and keep the other. It may be necessary after the bees have united, to remove the empty combs (if any) leaving the combs of honey.

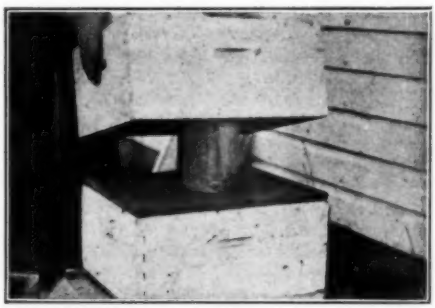
There is no danger in having colonies too populous in the fall, the danger lies in not having them sufficiently populous to winter successfully.

A Word About the Food Chamber

A food chamber hive is a double-story hive, the upper story (preferably a deep extracting super) being well filled with honey from the major flow, in addition to what honey there may be in the lower chamber. It is important to have the food chamber well filled so that the winter cluster, as it moves upward during the winter may not run short on noney.

This year, in some localities, the food chamber, due to the lack of a honey flow earlier in the season, is not well filled. It is hoped that the fall flow from goldenrod and aster, in regions where these plants are plentiful and secrete nectar, may fill up the food chambers. If the doesn't happen it will be necessary to feed sugar syrup to make up the deficiency in honey. See accompanying cut with legend for further directions on fall feeding, which should be done early in October as brood-rearing ceases.

If the food chambers have little if



Method of feeding sugar syrup using five or ten pound friction-top pail, the cover of the pail being perforated with about 20 holes made with a 3d nail, the pail of warm syrup being placed with the cover of the pail facing down over the hole in the inner cover, with the block removed. The empty super protects the feed can and the outer hive cover is placed on top.

any honey at the close of the season it may be necessary to remove the empty combs and keep enough combs containing some honey to winter each colony in a single-story hive or brood chamber. This has been and can be done, but it is necessary to have the combs quite well filled with stores (at least 40 lbs.) to supply winter and early spring food requirements. Further feeding may be necessary next spring.

Use of Tartaric Acid

In the Root Company apiaries we have not fed sugar syrup for winter stores for twenty years, except to a few colonies in 1934—a season somewhat similar to this. We let the bees feed themselves, which they will do under normal conditions. We hope it may not be necessary to feed sugar this fall but as yet we have our fingers crossed. There is a goldenrod flow on. The scale hive is gaining a few pounds each day that is favorable for nectar secretion. (This is September 15.) We are hoping things may happen in our apiaries during the next few weeks. Time will tell.

When we did feed warm sugar syrup, two parts sugar (use nothing but pure granulated sugar) to one of water, in 10-pound pails inverted over the holes in the inner covers, we had trouble sometimes, during cold nights, from syrup granulating over and plugging the small holes in the covers of the pails. We overcame this by using tartaric acid — one heaping teaspoonful to each 25 pounds of sugar used. The acid is added after the sugar has been put into hot water and while the mixture is being stirred. The tartaric acid prevents granulation of the syrup over the feeder holes, also retards granulation of the syrup after it is stored in the combs.

It seems likely that sugar will be made available for the beekeepers who need it for feeding their bees. Beekeepers should get in touch with the chairman of their local rationing board. Beekeepers in various states who need more than 10 pounds per hive should contact presidents of state beekeepers' associations, extension men in beekeeping, or state apiarists. See editorial, page 606, this issue. Our government recognizing the importance of bees for pollination should be interested in furthering the interests of the beekeeping industry.

Winter Protection for Bees

As brought out in the Symposium, page 615, this issue, very populous colonies with an abundance of good stores are able to withstand considerable cold weather, even though hives have comparatively little insulation or wind protection. It is obvious (in fact, we have conducted experiments in our own apiaries which have proved) that colonies in insulated hives consume less food during the winter than colonies in single-walled hives with no insulation. Reference was made on pages 50 and 51 of the January, 1942, issue of Gleanings, to our experiment made last winter comparing packed with unpacked colonies. In the June, 1942, issue, page 331, we give results of the experiment, which in brief are, that unpacked colonies each lost 5¼ pounds more than packed colonies from November 21, 1941, to April 21, 1942, also that the colonies in unpacked hives had an average of 9¼ combs containing some brood, while colonies in packed hives had an average of 8½ combs with some brood on April 24, 1942.

We had hoped to compare the per colony average of surplus honey stored by the unpacked and packed colonies during the major honey flow, but unfortunately the season thus far around Medina has been a complete failure, so far as surplus honey is concerned, which fact we regret.

The accompanying picture shows a packed hive with insulation applied, about five inches of fine wheat straw, under the asphalt paper. See pages 50 and 51 of January. 1942, Gleanings, for details. It will doubtless

(Continued on page 636)

A two-story colony packed with four or five inches of fine straw under asphalt paper, the packing extending to the ground.

Honey Production for 1942 as of September 16

United States Department of Agriculture, Bureau of Agricultural Economics, Washington

A crop about 13 per cent smaller than last year was expected by 5000 honey producers reporting in late August to the U. S. Department of Agriculture. The decrease would have been about 21 percent except for an increase of 10 percent in number of colonies or hives of bees this year. During much of the blooming season for clovers and other important northern honey plants, the frequent rains washed nectar from the blooms and kept the bees confined to their hives. Normally this is the important period for collection of nectar and storage of honey. A total crop of 179,653,000 pounds of honey this year is indicated compared with 206,591,000 pounds produced in 1941.

A better than normal late summer and fall nectar flow was expected and allowed for in the producers' estimates of total production for this year. This expectation was based on the excellent condition of fall nectar producing plants and the normally drier weather hoped for during that period. Unless these hopes are realized the year's production will fall below the figures stated.

Expected yields of honey per colony were down 21 percent from 1941, averaging 36 pounds compared with 45.4 pounds last year, but an increase of about 10 percent in the number of colonies limited the decrease in total production.

The expected decrease in yield per colony is most severe in the North Central States, falling from 60.3 pounds in 1941 to 48.8 pounds in 1942, a decrease of about 36 percent. This group of States usually produces almost half of the nation's crop of honey. But a large increase in the number of colonies of bees, about 15 percent, limited the decline in total production to only 26 percent, or from 98,007,000 pounds in 1941 down to 72,708,000 pounds this year.

Colony yields in the North Atlantic States declined from 52.1 to 34.9 pounds, but a 13 percent increase in number of colonies held the production decline from 22,468,000 pounds last year to 16,990,000 this season. In the South, a yield decline from 22.5 pounds down to 21.2 pounds but a 5 percent gain in colonies, resulted in only a slight decrease in production, from 36,209,000 pounds to 35,824,000. The Far West reveals an increase in yield from 56.0 up to 57.6 pounds per colony, a 5 percent increase in colonies, and an increase of total production from 49,907,000 pounds last year up to 54,131,000 pounds this season. California, the leading honey State, shows an increase of 11 percent in number of colonies, but a 14 percent decline in yield per colony and a decrease in total honey produced from 22,910,000 down to 21,900,000 pounds.

Wholesale prices reported as being received by these producers in August for extracted honey in large cans, kegs, or barrels, averaged 11.4 cents per pound, compared with an average seasonal price of 6.5 cents received during 1941 and 5.7 cents during 1940. The average prevailing August price this year was 11.9 cents in the North Central States, 10.3 in the South, 10.7 in the West, and 12.2 in the North Atlantic States.

Retail prices received by the producers for extracted honey in small quantities averaged 15.8 cents per pound for the United States compared with the season's average of 9.7 in 1941 and 9.3 in 1940. The August average this year was 15.8 in the North Central States, 15.4 in the South, 15.0 in the West and 19.0 in the North Atlantic States.

Prices received for beeswax averaged 40.3 cents per pound for the country as a whole and did not vary greatly in the different areas. The North Atlantic average of 41.8 cents was highest and the lowest was 37.5 cents in the South. The sharp increase over the season's price of 22.5 cents in 1940 up to 35.6 cents in 1941 and the present record high level is due mainly to the need for beeswax in the manufacture of munitions, and also to the increased need for honey comb foundaton.

The state details of numbers of colonies, yields per colony, total production, and August holdings appear in the accompanying table. Revised estimates for 1942 and prior years will be published in December.

NUMBER OF COLONIES, YIELD PER COLONY, AND PRODUCTION OF HONEY, 1941 and 1942—Preliminary.

State and Division	COLONIES OF BEES 1941 Thous.	1942 as of 1941 Percent	1942 Thous.	HONEY PER COLONY 1941 Pounds	1942 Pounds	PRODUCTION 1941	1942 Thousand	Honey on hand for sale Aug.20,1942 Pounds
Me.	4	115	5	16	22	64	110	22
N. H.	2	105	2	35	37	70	74	31
Vt.	7	115	8	36	45	252	360	180
Mass.	14	120	17	26	20	364	340	99
R. I.	1	120	1	27	22	27	22	7
Conn.	17	115	20	33	40	561	800	320
N. Y.	183	111	203	70	50	12,810	10,150	3,552
N. J.	25	106	26	48	24	1,200	624	100
Pa.	178	115	205	40	22	7,120	4,510	1,443
N. ATL.	431	113	487	52.1	34.9	22,468	16,990	5754
Ohio	290	110	319	46	34	13,340	10,846	2,820
Ind.	200	110	220	44	25	8,800	5,500	1,210
Ill.	205	110	226	45	20	9,225	4,520	1,356
Mich.	153	115	176	64	40	9,792	7,040	2,253
Wis.	160	115	184	59	37	9,440	6,808	2,315
N. C. E.	1008	111.6	1125	50.2	30.9	50,597	34,714	9,954
Minn.	210	119	250	83	65	17,430	16,250	2,762
Iowa	167	125	209	96	42	16,032	8,778	1,580
Mo.	136	122	166	34	13	4,624	2,158	432
N. Dak.	21	110	23	99	88	2,079	2,024	182
S. Dak.	14	120	17	98	112	1,372	1,904	248
Nebr.	37	120	44	116	120	4,292	5,280	317
Kans.	31	130	40	51	40	1,581	1,600	656
N. C. W.	616	121.6	749	77.0	50.7	47,410	37,994	6,177
Del.	3	105	3	17	10	51	30	1
Md.	23	100	23	21	12	483	276	149
Va.	116	115	133	24	18	2,784	2,394	862
W. Va.	95	109	104	19	14	1,805	1,456	670
N. C.	164	108	177	19	25	3,116	4,425	1,062
S. C.	50	110	55	18	20	900	1,100	220
Ga.	160	108	173	17	25	2,720	4,325	303
Fla.	146	101	147	49	49	7,154	7,203	2,521
S. ATL.	757	107.7	815	25.1	26.0	19,013	21,209	5,788
Ky.	140	105	147	13	14	1,820	2,058	165
Tenn.	144	110	158	19	14	2,736	2,212	243
Ala.	116	109	126	18	9	2,088	1,134	363
Miss.	53	105	56	12	10	636	560	73
Ark.	75	100	75	16	9	1,200	675	81
La.	56	100	56	25	16	1,400	896	349
Okla.	68	103	70	37	36	2,516	2,520	378
Tex.	200	95	190	24	24	4,800	4,560	1,277
S. CENT.	852	103.1	878	20.2	16.6	17,196	14,615	2,929
Mont.	30	115	34	128	128	3,840	4,352	1,480
Idaho	115	95	109	41	60	4,715	6,540	3,205
Wyo.	25	98	24	73	93	1,825	2,232	491
Colo.	64	95	61	75	90	4,800	5,490	1,812
N. Mex.	15	98	15	37	60	555	900	225
Ariz.	68	110	75	94	80	6,392	6,000	2,460
Utah	51	95	48	23	50	1,173	2,400	792
Nev.	13	94	12	22	70	286	840	185
Wash.	64	111	71	27	27	1,728	1,917	364
Oreg.	51	102	52	33	30	1,683	1,560	328
Calif.	395	111	438	58	50	22,910	21,900	5,475
WEST.	891	105.4	939	56	57.6	49,907	54,131	16,817
U. S.	4,555	109.6	4,993	45.4	36	206,591	179,653	47,419

Asked and Answered

Liquefying Honey

Qnestion.—I have been having trouble with my extracted honey turning to sugar. I understand it can be thinned by placing in hot water. What can be done about it? —Cecil A. Brock, Penn.

Answer.—Granulated honey may be reduced to liquid form by heating in a container placed in warm water. If the honey is brought to a temperature of 160 degrees Fahrenheit and left at that temperature for not more than 10 or 15 minutes, then cooled, this treatment helps to retard future granulation. Honey should be kept in a room of even temperature.

Wind Blades Attract Bees

Question.—A man out in the country ten miles has bees. He has "wind blades" for charging batteries for radio. The bees frequently take a notion to storm these blades as the wind turns them rapidly. The bees attack by the thousands and are killed. They can be swept up by the pailful following one of their fights with the blades. Have you any suggestion for doing anything about this other than doing away with either the bees or the blades?—R. S. Satterfield, Okla.

Answer.—About the only thing that can be done with the wind blades used in connection with charging batteries is to screen them so that bees cannot get at them. We have had similar reports in the past. It seems that the motion of the wind blades, also the vibration of the machinery attract the bees.

What to Do With Combs Heavy With Pollen

Question.—I have some nice combs, heavy with pollen. How can I get it out?—E. L. Glaser, Oregon.

Answer.—Your nice combs which are heavy with pollen are much more valuable than they would be if they were just empty combs. This pollen represents the food necessary for rearing more young bees, and we suggest that you put the combs in an upper story and give them to each of the colonies you now have. This will make two-story hives for your bees to occupy, and if they are already in two-story hives it may be entirely possible for them to occupy a third story. At least, there would be enough empty combs in the hive which could be exchanged for those filled with pollen. The combs of pollen will keep in good condition if you give them back to the bees, but if they are stored for any considerable length of time the pollen is liable to sour or mold, thus spoiling it for the use of the bees. When such combs are given to a strong colony they generally clean the pollen out of the cells and carry it out of the hive.

Moving Bees Short Distances

Question.—I wish to move my three hives of bees from our back yard to the field next door, the distance being about 60 feet. I would like to know when the moving should be done. I would not care to move them only a few feet at a time.—Frank Nemec, O.

Answer.—To move your bees a distance of 60 feet, simply pick them up late some evening after all of the field bees are in and carry the hives of bees to the new location. Be sure that you do not leave any hives or anything that looks like a hive, on the old location. You should place some grass, brush, or some such material over the entrances of the hives on their new location, so that the bees when they fly out of the hives the following morning may realize that they are on a new location and will orient themselves. Some of the old bees will likely fly back to the old location but not finding any hives or semblance of a hive, these old bees will fly around a bit, then return to the new location and settle down to work. The hives should not be placed too close together on the new location. About six feet apart is right.

Finding the Queen

Question.—I have difficulty in finding queens. How shall I proceed?—H. Kirke Stowell, Maine.

Answer.—As to finding a queen in a colony, there is no royal road to success. It is well to open the hive during the middle of the day when the large percentage of the bees are in the field. You can then see the queen more easily. You should use as little smoke as possible, remove one comb at a time, examining each side carefully.

Effect of Metal on Wax

Question.—The editorial in the November, 1941, Gleanings, page 706, on wax contains the statement "Do not forget that copper or even iron kettles used in heating discolor wax." I would be interested to know on what basis copper is said to discolor wax. My own experience based on advice from Floyd Markham, whose exhibition wax is always near perfection, is that copper is the ideal metal for wax handling equipment. I find no mention of copper in U.S.D.A. Circular E 495 by Vansell and Bisson. Copper is of much more interest to beekeepers than glass or platinum, and price, availability, and ease of fabrication make it preferable to nickle, stainless steels, or aluminum, the metals recommended by these authors.—Howard Potter, Jr., Michigan.

Answer.—Copper will seldom injure capping wax if the heat is not too great or continued too long. Cerotic acid of beeswax under some conditions will act on the copper and give the wax a greenish cast, because almost all salts of copper are green.

Mouldy Combs

Question.—Can you give me any information on cleaning mold out of brood combs? I have some that are too good to melt.—Mary E. Nicol, Montana.

Answer.—Combs that are not too badly molded will be cleaned up by the bees. If you will give not more than one or two combs to each strong colony, you will find that the bees will do a good job of cleaning up the combs. Combs that are very badly molded may not be renovated satisfactorily. The bees are likely to remove the mid-rib of the comb, where the moldy parts occur. The bees will then build drone cells instead of worker cells and this, of course, is objectionable. If combs are too badly molded, they should be cut out, rendered into wax and replaced with full sheets of foundation.

Soybean Flour Without Pollen

Question.—As I have been anxious to start an experiment in feeding soybean flour to several wintered colonies early in March, I tried to locate a source of flour in Canada. Through the good office of Mr. C. B. Gooderham, I located, I believe, the only manufacturer in Canada, Sun-Soy Products, Limited, Toronto. They make only a full Soya flour called Soyflakes which contains the full oil content of soybeans, but extracting the bitter substance. I secured a sample of this flour, and upon my return made up cakes with sugar syrup (no pollen on hand) and gave to several colonies on March 8 when I was able to examine all colonies for brood and stores and pollen. I was surprised to find as much as three (Jumbo) combs of capped brood in some of the colonies with emerging bees. Most of the wintered colonies are Carniolans. One of the best of these colonies wintered last year produced 316 pounds net of honey, and besides packed an 11-frame Jumbo full of honey. As I cannot secure any flour in Canada made by the expeller process and having a fat content of .50 to 7.00 percent, I hope the full oil content of 20 percent will not have any harmful effects on the bees. I would like to find out just the specific reasons for not using the full Soya flour, having average fat content of 20 percent. Pollen contains from 10 to 15 percent fat according to analysis on page 569 of the ABC & XYZ of Bee Culture. —S. A. Stewart, Alberta, Canada.

[This question was referred to Dr. Farrar who replies as follows:—Ed.]

Answer.—Your observations are most interesting and it is obvious that your over-wintered colonies must have had fairly large pollen reserves last fall. Many of our colonies had similar brood conditions late in January as described by you but their pollen reserves were soon exhausted. We maintained brood-rearing thereafter by feeding soybean flour supplemented with 25 percent pollen. Our work on soybean flour as a pollen supplement consisted of testing commercial grades. Our recommendations that flour produced by the expeller process having a fat content of .5 to 7 per cent describe flours tested by us as giving best results when fed. We are not in a position to state whether a higher fat content would be injurious to bees. There is a vast amount of research needed regarding the nutritional qualities of soybean flours. The fat content of 33 pollen samples analyzed by our Pacific Coast Laboratory in cooperation with the University of California averaged 4.9 percent crude fat and 30 of these averaged 3½ percent. We lack information as to whether bees utilize the fat in natural pollens. Certainly a low fat grade of soybean flour is more economical than a high fat content flour if it produces the same number of bees. We would be interested in feeding some of the Canadian flour if it were convenient to do so. We have fed only one grade with 20 percent fat and its brood-rearing value was considerably below the type of flour recommended. Apparently the method of processing soybeans in producing flour has an important influence on the breakdown of the protein substance into various amino acids. The fat content of the flour may be entirely unimportant as far as bee nutrition is concerned or it may be highly important.—C. L. Farrar, Apiculturist, Madison, Wisc.

Beeswax for Furniture Polish

Question.—I would like to have recipe for making furniture polish of turpentine and beeswax.—Milton Ortendahl, Wisconsin.

Answer.—Beeswax alone does not make a good furniture polish. It is not a hard wax therefore it will never polish smoothly. Some hard wax must be used so that a hard surface will result and the beeswax will then act as a toughener. A formula which you will find quite satisfactory is as follows:

Carnauba wax	20 parts
Beeswax	30 parts
Japan wax	30 parts
Turpentine	326 parts
Paraffin wax	60 parts

Melt the waxes together; remove from the fire and add the turpentine, stirring vigorously. Do not expose to flame and keep covered to prevent evaporation.

American Honey Institute News Notes

The American Honey Institute is cooperating with the United States Office of Civilian Defense in publicizing FIRE PREVENTION WEEK October 4 - 10. It is also cooperating with the War Production Board on WASTE FATS PROGRAM. One pound of waste cooking fats will produce enough glycerin to manufacture ½ pound of dynamite. Two pounds of waste cooking fats will produce enough glycerin to fire 37 mm. anti-tank shells.

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The Director of the American Honey Institute is scheduled for a broadcast on Honey on October 1 and one on Honey Fruit Cake on October 29.

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National Honey Week will be celebrated the last week in October again this year. Will there be a display of Honey in your grocery stores?

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The September issue of the magazine. "What's New in Home Economics" has a Honey Glazed Ry-krisp recipe. In this same edition an article entitled, "Our Nation Needs Better Breakfasts", includes these statements:

"Honey, molasses, or corn syrup dribbled over ready - to - eat or cooked cereal will not only save a trip to the sugar bowl but will provide a pleasing flavor variation."

"A square of comb honey placed in the center of the cereal dish is a delicious way to add sweetness."

• • •

"Old Favorite Honey Recipes"—Have your honey customers a copy of this book? A letter from one of our state Red Cross nutrition heads states, "The material in your very attractive booklet is the best I have ever seen". This woman writes that she has a degree in Dietetics and hospital interneship, plus one year hospital training and three years as Nutrition Advisor with the Relief Administration in one of our largest cities.

Another letter in the same mail states, "I have recently come into possession of one of your most valuable books, 'Old Favorite Honey Recipes' and I am so extremely pleased with it that I am asking if you will be so kind as to mail four copies to names I will send you."

A third letter states, "Received the recipe book this morning and find it very attractive. Immediately tried the chocolate cake recipe. It looks delicious and am sure it will taste so when it is cool enough to frost."

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The new leaflet, "Make Every Meal a Guest Meal with Honey recipes", was made to fit the cover of a 5-pound pail. It can, however, be used to distribute to customers. A man writes, "This Leaflet is by far the most attractive one that has been put out".

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The new 3 x 6", 32-page booklet, "Honey Recipes—for Sweets, for Energy, for Conservation", is now ready for you. Individual copies will sell at five cents, seven cents by mail. This booklet contains the Seal of Acceptance of the Council on Foods of the American Medical Association. The back page has been left free for imprinting. If you are interested, write for a copy to the American Honey Institute, Commercial State Bank Building, Madison, Wisconsin.

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Jane Ann, "honey chile" of Prof. J. A. Munro, Fargo, No. Dak.

Just News

Word has come that the meeting of the Southern States Beekeepers' Federation scheduled for November in Nashville, is cancelled, due to the war emergency.

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As we go to press reports from parts of Indiana and Illinois indicate a fall flow to help fill up brood chambers for winter, while northern Michgan reports a very light flow. Some fall honey has been stored in northeastern Ohio but goldenrod has not yielded heavily.

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W. J. Nolan, of the U. S. Department of Agriculture, Division of Bee Culture, Beltsville, Md., has now been inducted into the Army with the rank of Captain. We are informed that he came out of the first World War with the rank of Second Lieutenant. Instead of dropping his interest in military matters, he remained active in the Army Reserve Corps and worked up to the rank of Captain. About May 1 he was called to active duty, and we are told he is taking advance training in Georgia. Previous to his assignment to this school, which we presume is for temporary duty, he was with the Military Police. Captain Nolan is in for the duration but here is hoping he will be back in bee culture at the end of the war. He has been a most useful man in Washington in furthering the interests of beekeepers. His work on brood and bee behavior is outstanding. He furnished some of the material that appears in our ABC & XYZ of Bee Culture. It may not be out of place to mention that Mr. Frank E. Todd, who up to now has been in charge of the Pacific States Bee Culture Laboratory, has been transferred to Beltsville, Maryland, for the duration. Mr. George E. Vansell is now in charge of the Laboratory at Davis, California.

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Curious passersby gathered to view the wreckage of a truck and an automobile after a collision at Ingot, Calif. They didn't stay long. The truck was loaded with bees—thousands of 'em—and they were all angry.—Paul J. Pirmann, Fulton, Mo.

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The Middlesex County Beekeepers' Association will meet at 19 Everett St., Concord, Mass., at 7 P.M., on Saturday, October 24. Mrs. Benjamin A. Hildreth, of Holliston, will be in charge of the supper featuring honey baked beans a la Norton, frankfurters, potato salad, rolls with comb honey, coffee, and honey apple pies. Mr. Hugh H. Spencer will entertain with a talk on "Adventures of a Beekeeper's First Year." Bring your beekeeping problems and suggestions. —A. M. Southwick, Waban, Mass.

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The Finger Lakes Honey Producers' Cooperative of Groton, N. Y., is proud of its progress during the period ended June 30, 1942. It has had a successful year influenced favorably of course by the rising price of honey. Total volume of business, including honey and supplies amounted to $125,000. Approximately one and a quarter million pounds of honey were handled. A large warehouse was acquired next door to the packing plant and packing facilities were increased to accommodate increasing membership. A membership of 35 beekeepers was reported. In addition to $.04 per pound retained by the Cooperative for operating capital and a reserve for contingencies, and in spite of the fact that sales were divided as nearly equal as possible over the twelve months, beekeepers are receiving the following prices for their 1941 honey crop: Extra white-water white, 8½c per lb.; White, 8¼c per lb.; Extra light amber, 8c per lb.; Dark buckwheat, 7½c per lb.; Light buckwheat, 7c per lb. Members have now invested nearly $13,000 in the Cooperative. To build a permanently successful future, enough money must be invested to provide the Cooperative with adequate equipment and facilities to supply an increasing volume of a preferred product—Dyce processed honey; a good and fortunate start has been made.—W. L. Coggshall, Groton, N. Y.

• • •

"Honey Recipes" is the title of a new 32-page booklet from the office of the American Honey Institute. It is beautifully gotten up with all of the latest honey recipes approved by the Institute and what is more, by the American Medical Association. We find in it a strong endorsement for honey as a food, especially for infants,

About 200 beekeepers of the Empire State Honey Producers' Association assembled in the Pavilion in Elmwood Park, Syracuse, N. Y., August 15, 1942.

Empire State Honey Producers' Meeting

In view of gas rationing and the need of conserving rubber, the summer meeting of the Empire State Honey Producers' Association was held at Syracuse, because the central location would mean the least travel. While no one could tell in advance what the attendance might be, the meeting on August 15 was one of the largest in years. Elmwood Park, Syracuse, nicely adapted for such purposes, is away from busy streets, quiet and beautiful. Chairs had been rented for the pavilion which holds more than 200, and there were no vacant seats.

Pres. Burel H. Lane presided and introduced the speakers. Dr. E. F. Phillips paid a tribute to the New York beekeepers for their alertness and for their cooperation with the authorities in Washington.

Harold J. Clay of the Honey Marketing Service, outlined the plans of

Mr. Nolan of the War Production Board, Washington, addressing the beekeepers at The Empire State Summer Meeting

B. L. Lane, President of The Empire State Honey Producers' Association

George Rea, retiring extension worker for New York State, welcoming his successor, Dr. E. J. Dyce. See page 489, August issue.

OPA for the industry and answered many questions relative to the Restrictive Order M-118. He also devoted some time to explaining the status of honey under the General Maximum Price Agreement.

Mr. Nolan of the war Production Board, spoke of the Board's interest in honey and beeswax. He frankly said that he had attended the meeting in order to learn as much as possible about honey so that he might more intelligently meet the various problems presented. A good share of the program was devoted to questions answered by Mr. Clay and Mr. Nolan.

George Rea, retiring extension worker for New York State, thanked the beekeepers for their friendship and wonderful cooperation during the years that he travelled among them, and paid a gracious tribute to Dr. Dyce, his successor. (See page 489 of the August number.)

Dr. Dyce, modest and unassuming, said he looked forward to a continuance of good will with which the beekeepers of the state welcomed him from Ontario.

CUYAHOGA CO., OHIO, MEETING ON JULY 26, 1942

Left: George Seidell, Strongsville, O.
Above: Charles Reese, Columbus, O.
Right: Jere Frazier, Springfield, O.

Field Day Meetings in Wisconsin

Beginning at Menominee Falls on July 21, Viroqua on the 22nd, Ladysmith, the 23rd (all of Wisconsin), Detroit Lakes, Minnesota, the 25th, and Fargo, North Dakota, the 27th, a series of field day meetings were held. We will confine our discussion to the meetings held in Wisconsin in this issue, taking up Detroit Lakes, Minnesota, and Fargo, North Dakota, in the November issue.

At all of the meetings that we have attended this summer, in Pennsylvania, New York, Iowa, Minnesota, Wisconsin, and North Dakota, the attendance was up to normal in spite of the fact that traveling was difficult owing to the rubber and gas shortage. While the social feature at all of these meetings is always a strong attraction, it was apparent this year that beekeepers came from everywhere to find out something about price levels on honey and beeswax. It is unnecessary to state that these levels are in an unsatisfactory condition, because of the wide range of ceilings set for March of this year. See page 605.

The Trend Toward the New Orthodoxy of Wintering

All through the Northwest where it is much colder during the winter than in Ohio and Indiana, it was rather surprising to see how many were wintering in two-story hives with an upper entrance to let off excess of moisture and to provide against the contingency of the lower entrance being clogged with dead bees, snow, or ice. The gospel of giving more attention to internal condition of the colony—i. e., plenty of stores, pollen, young bees, and externally a good windbreak is surely taking root. The stores should, at the beginning of winter, be **above** the cluster—not **below** it. We shall have an article in the December Gleanings from a successful beekeeper in Northern Minnesota stressing these points. He has wintered in cellars and outdoors but prefers the latter.

Mr. Rahmlow's Questionnaire

As usual, Mr. H. J. Rahmlow, Secretary of the Wisconsin Beekeepers' Association, was the presiding genius. He makes not only an excellent secretary but has the happy faculty of putting life and enthusiasm into all of the proceedings of meetings held in Wisconsin.

One feature conducted by him was the questionnaire. He announced that questions could be sent in and that he

(Continued on page 637)

No. 1 is a picture of Mr. Ivan Whiting, of Rockford, Illinois, and Mrs. Harriett M. Grace, both of whom are well known not only to the beekeepers of Illinois but of Wisconsin.

No. 2 is Mr. Lewis Parks, of the G. B. Lewis Co., and his sister, both of whom attended one of the meetings. Mr. Parks very carefully explained the situation in regard to price ceilings and the restrictions placed by M-118.

No. 3 is Mr Robert Knudsen, of Ladysmith one of the leading beekeepers of Wisconsin, and president of the Wisconsin State Beekeepers' Association. He has at his home apiary a complete extracting outfit as well as one for processing honey, one of the best in the state. He is very methodical in his work and is well supported by members of his family, some of whom are shown in Fig. 7. Left to right is Walter Knudsen, Chester Peterson, Mrs. B. F. Knudsen, and Ruth E. Knudsen.

In Fig. 4, Walter Diehnelt, Menominee Falls, Wis., is showing a weight that he uses made of a cement block with a wire loop attached to the top. This he puts upon the shade boards of his hives to hold them down. They are much easier to lift and are inexpensive. All one needs is a little box with a wire loop. This is filled with cement, nicely leveled off and when it hardens is taken out. It was in his apiary where the field demonstrations were made as shown in Fig. 10. His yard is a model of neatness, hives standing three and four stories high, indicating that a fair crop of honey is coming in. The bees were gentle as shown by the fact that the beekeepers went around the yard without bee veils.

No. 5, we have Mr. Rahmlow explaining some of Mr. Knudsen's methods. At the time the picture was taken, he was standing in the center of the group, as shown in Fig. 10.

No. 6, we have the Convention as they sat on easy benches at Ladysmith, the last point of the field day in Wisconsin.

In No. 8, we have Mr. and Mrs. Wilber S. Mong, of Belvidere, Ill. They have some 80 colonies. Mr. Mong has time to give to his bees.

No. 9, we have the Questionnaire group as they met at the Maple Leaf Club Grounds, at Ladysmith with the lake in the background. Mr. H. J. Rahmlow is at the extreme right, and on his right and sitting upon the raised benches, were those who answered the questions put to them individually or collectively.

These grounds at Ladysmith make one of the most beautiful spots for a convention anywhere in all Wisconsin. It is comfortably shaded and this is where beekeepers have been going for their summer field meets.

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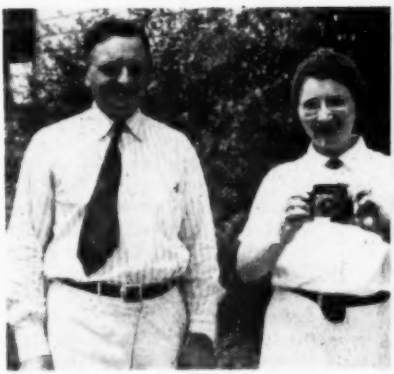

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Pictures of Experimental Apiaries, Equipment and Personnel at the Iowa Experiment Station, Ames, Iowa. Taken July 17, 1942.

By M. J. Deyell

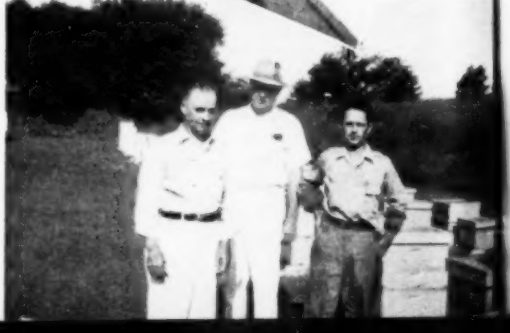
(1) This is one of the apiaries used for testing out colonies of bees with a high degree of resistance to AFB. A small portion of diseased comb is grafted into the center of a comb in a colony and results are carefully tabulated. This disease resistance project was started in 1935 and is still in progress.

(2) Another apiary where some races of bees have been compared. This is where the recent five-year project of comparing the Italian, Caucasian, and Carniolan races was conducted. At that time, 1932-1936, 12 colonies of each race were operated in this apiary.

(3) This shows a handy device for lifting a pile of supers off and on to a brood chamber. It saves some labor and time and may be used to advantage when two operators work together.

(4) A full comb of brood with adhering bees taken from the center of a hive containing a strong colony. A small portion of diseased brood had been put into the center of this comb a few days prior to the time the picture was taken.

(5) From left to right: Dr. O. W. Park in charge of the Iowa Experiment Station, F. B. Paddock, State Apiary Inspector and Extension Specialist in Beekeeping for Iowa, and Noval Baker, assistant to Dr. Park.



Spinster Jane Says

Our newspapers are all filled with news of the awful war being waged in four continents. All our picture sections show military men, commanders or common soldiers, military equipment—tanks, bombers, and battleships, to the exclusion of other things of interest. We must not become war-minded altogether. Such an obsession would breed only undying hatred of the Axis powers, and their terrible acts of violence and cruelty.

What a relief to lay aside the papers, turn off the radio, and go out into the sunshine and peace of the great out-of-doors, forgetting all the horrible slaughter and bloodshed going on in the world. Bees are humming busily, flowers are blooming, all still green and beautiful as far as we can see.

Yesterday (Sept. 9) we had rain, and it continued far into the night. It was much needed, and should bring on more clover bloom if it keeps warm. Right now buckwheat has been harvested, and little nectar can be found except in fireweed and goldenrod. In spite of nectar shortage, the busy little workers never cease their seeking. They are living examples to all humans, and are like Solomon's ideal housewife. They "look well to the way of their household, and eat not the bread of idleness." Isn't this doubly necessary for both bees and humans now that war is on, and thrift so vital a thing?

We have looked forward to taking off quite a quantity of dark honey, but not all of it. With sugar being rationed, though we can obtain it to feed our bees for winter, yet we firmly believe feeding honey is far better. It is the bees' natural food; contains everything they need. So why pay out money for sugar?

And before I leave the subject of dark honey, can anyone tell me why bees are so ugly when feeding on buckwheat? Are they like men coming to the table where the same food is served day after day until they are sick of the sight of it? Men, I said, not good natured women!

We have pails ranging from 35-pounders to small 4-pound sizes, also glass containers and large and small cans, all here waiting until we take off the dark honey. We will have to follow the style and ration it or there may not be enough to go around. Tourist Camp operators, Lumber Camp operators, Game Inspectors, Preachers, Neighbors, etc., were Johnny-on-the spot in getting their containers here, but one and all were told we could promise nothing If we had it, their orders would be filled. If not, well ------

Our bees were all brought home eventually. They refused to gather nectar from clover where there were sulphur fumes, and worked at once on home clover. A few were put on a neighbor's farm near the cemetery, and no complaints have been laid though they did chase one lady who was looking after flowers on a grave. One swarm came off up there, alighting in the top of a spruce tree, near at hand. A telephone call sent one of Boy's brothers to the scene, and he certainly drew a crowd as he hived that swarm. Neighbors gathered, at a safe distance, men, women, and children, and the bees were on their best behavior. Not one stung the operator. All went into the hive peaceably and in order. Talk about publicity! Our bees are getting it, and so is our honey. Again I repeat: Selling a good article is the best kind of advertising. They always come back for more and send others, too,

We have killed our first colony of bees. The case was drastic but necessary. It had a worker queen, or laying worker, reigning in it. She, Nazi-like, would have none of the queens introduced to supplant her. One and all that were introduced were balled and destroyed. She filled the brood chamber with eggs, drone brood resulted, of course, and drone brood in worker cells was a new thing to us. The drones were tiny, and most of them died before emerging. Fearing this might lead to disease, Boy killed the colony. Of course, had he had the time, he could have divided up the frames and given them out to various colonies, thus seeing to it that the Nazi-queen was destroyed, but he hadn't the time. Besides, we have never had any bee-diseases in this district, and he wanted to make sure there would be none through his neglect.

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 8 cts. per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding.

HONEY FOR SALE

CLOVER EXTRACTED in new sixties. H. G. Quirin, Bellevue, Ohio.

WHITE CLOVER extracted, 12½c Howard Grimble, Holcomb, N. Y.

CHOICE MICHIGAN clover honey in new 60's. David Running, Filion, Mich.

NORTHERN MICHIGAN clover honey in new 60's. C. J. Freeman, Mesick, Mich.

FANCY IOWA white clover extracted honey. Kalona Honey Co., Kalona, Iowa.

CHOICE MICHIGAN white clover honey in 60's. L. S. Griggs & Son, 711 Avon St., Flint, Mich.

WILL HAVE more tupelo honey May 20th. Marks Tupelo Honey Co., Appalachicola, Florida.

NEW CLOVER COMB—14 to 16 oz. extra nice, $4.50 case of 24. Clarence Engle, Kearneysville, W. Va.

COMPLETE line comb and bottled honey, pure clover. Also packed in 5's and 60's. Central Ohio Apiaries, Inc., Millersport, O.

HONEY FOR SALE—We buy and sell all kinds, any quantity. H. & S. Honey & Wax Co., Inc., 265-267 Greenwich St., New York.

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

FANCY WHITE comb honey, $5 case; No. 1 clover or buckwheat, $4.; amber, $3.75; white clover extracted, 14c; amber or buckwheat, 12c. C. B. Howard, Geneva, N. Y.

Honey PACKERS—Write us for prices on carload lots of California and Western honeys. We stock all varieties. Hamilton & Co., 1360 Produce St., Los Angeles, Calif.

OF COURSE you want the best. That is what you get when you buy TOWNSEND'S Michigan clover honey. Now ready for the market. E. D. Townsend & Sons, Northstar, Michigan.

NEW YORK State comb and extracted honey; buckwheat and clover; any quality, all size packages. Five-pound pails my specialty. Edward T. Cary, Midland Ave. and Tallman St., Syracuse, N. Y.

FOR SALE

QUEENBEE PAINTING outfits, $1.00 postpaid. Southwick Apiaries, Waban, Mass.

WAX WORKED into quality medium brood foundation for 16c per pound; 100 pounds, $12. Fred Peterson, Alden, Iowa.

COMB FOUNDATION at money-saving prices. Plain, wired and thin sections. Wax worked at lowest rates. Comb and cappings rendered. Robinson's Wax Works, Mayville, N. Y.

WRITE FOR CATALOG. Quality bee supplies at factory store prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Bee Supplies, Onsted, Michigan.

THE ONLY complete line of wax rendering equipment ever offered—the "Perfection" Line. A size and type suitable for every commercial beekeeper. Write for descriptive circular. Robinson's Wax Works. Mayville, N. Y.

SAVE MONEY by letting us work your wax into wired or regular comb foundation. Large catalog describes everything. You pay only wholesale factory prices, as we have no agents. Walter Kelley Co., Paducah, Kentucky.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We will not guarantee any honey buyer's financial responsibility, and advise all beekeepers to sell for cash only, or on C. O. D. terms except where the buyer has thoroughly established his credit with the seller.

CASH PAID for carloads and less than carloads of extracted honey. Send sample and best price. C. W. Aeppler Company, Oconomowoc, Wisconsin.

HONEY WANTED—Comb and extracted. William March, 2585 E. 128th Str., Cleveland, Ohio.

WANTED—White and amber honey; any amounts. D. F. Treap, 317 Keenan Ave., Cuyahoga Falls, Ohio.

WANTED—Honey and beeswax Mail samples, state quantity and price. Bryant & Cookinham, Inc., Los Angeles, Calif.

WANTED—Comb, chunk comb, white and light amber extracted honey. Any amount. Central Ohio Apiaries, Millersport, Ohio.

WANTED—White clover honey, Extracted, comb and chunk comb, any amount. Lose Bros., 206 E. Jefferson, Louisville, Ky.

CASH PAID for extracted clover honey. Send sample and best price. Clover Bloom Honey Co., General Delivery, Shrewsbury, Mass.

HIGHEST cash return made the day we receive your beeswax. Write for shipping tags and quotations. Walter T. Kelley Co., Paducah, Kentucky.

CASH PAID for extracted white clover or light amber. Send samples and best price to Honeymoon Products Co., 39 E. Henry St., River Rouge, Mich.

WANTED—White and light amber extracted in 60's. Also beeswax. Send samples with best CASH price. We carry complete line of Owens-Illinois new "DURA-GLASS" honey containers. Honey and wax accepted in payment ALEXANDER COMPANY, 819 Reynolds Rd., Rt. 3, Toledo, O.

HONEY. WE PAY HIGHEST PRICES. Strained comb or beeswax. Write for quotations. Seifert & Mann, Since 1887. So. Water Market, Chicago.

WANTED—Extracted honey in ton lots or more. Send samples and quote price delivered here. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

WANTED— White clover and light amber honey. Any amount. Cash at time of delivery. Clover Blossom Honey Co., 712 Kossuth St., Columbus, Ohio.

HONEY WANTED—Truck or carload lots delivered to Sioux City, Iowa. Write us at Wendell, and sumit sample. R. D. BRADSHAW & SONS, Wendell, Idaho.

WANTED — All grades of comb and extracted honey Bee supplies and honey containers for sale. Prairie View Honey Co., 12243 12th St.,, Detroit, Mich.

WANTED—We pay cash top price for clover honey in 60-lb. tins. Any quantity. Send samples and best price. Cloverdale Apiaries, F M. Babcock, Fredonia, N. Y.

WANTED—Five tons shallow frame light chunk comb honey in supers, two carloads light white clover extracted cans, supers returned. Box 3, Gleanings, Medina, Ohio.

BEES AND QUEENS FOR SALE

FOR SALE—45 colonies bees and honey. Guaranteed no disease. R. B. Hibbard, Calcium, N. Y.

BRIGHT ITALIAN AMERICAN QUEENS 50c each, any number. D. W. Howell, Shellman, Georgia.

CAUCASIAN "Queens", 60 cents each; 25 or more, 50 cents each. Lewis & Tillery Bee Co., Greenville, Ala.

IMPROVED ITALIAN queens, 50c; from a strain that produced over 600 lbs. of honey per colony. Henry Loehr, Caldwell, Tex.

FOR SALE—Bright yellow and three-banded queens. Guaranteed Satisfaction. Write for prices. Graydon Bros., Rt. 2, Greenville, Ala.

CAUCASIAN BREEDERS ONLY—Laying queens, 75c; tested, $2.00; 2-lb. package and queen, $2.30; 3 lbs., $3.00. Miller Bros., R. D. 1, Three Rivers, Texas.

FIFTY STATE INSPECTED colonies of bees in 10-frame Jumbo hives with sufficient winter stores and good equipment. Noah Bordner, Holgate, Ohio.

GOLDEN Italian queens; good workers, and gentle to work with; untested, 50 cents each, and tested, $1.00. Satisfaction guaranteed. Carolina Bee Company, W. O. Curtis, Mgr., Graham, No. Car.

BUYERS' CHOICE, 20 colonies out of 40, guaranteed free from disease. All story and a half. All new or in good condition. Supers to equip. Combs drawn from Root 3-ply. J. E. Venard, Wilmington, R. 3, O.

THREE-BANDED Italian bees and queens of extra fine quality; also extra fine honey-gatherers, 2-lb. package with queen, $2.00 each; 3-lb. package with queen, $2.50 each. Untested queens, 50c each, any number. A health certificate with every shipment. Alamance Bee Company, Geo. E. Curtis, Mgr., Graham, No. Car.

EXTRACTORS FOR SALE

FOR SALE—One 4-frame No. 25 Automatic extractor. Price, $30.00. Write for particulars to H. W. Mandle, Ney, Ohio.

CASH
Paid
For Honey
Cans and Cases
Furnished
Mail Samples and Best Price
C. W. Aeppler Company
Oconomowoc, Wisconsin

HONEY WANTED
Carloads and less - all grades - send samples, state quantity and delivered price.
Honey Sales Co., Minneapolis, Minn.
1808 No. Washington Ave.
Send for container price list

WANTED--Extracted Honey All Varieties
Send samples and delivered prices to
JEWETT & SHERMAN COMPANY
Cleveland, Kansas City and Brooklyn

WANTED—White and amber extracted honey. Fancy comb. also No. 1 comb honey. Comb honey in shallow extracting frames. Beeswax. We render old comb into wax. Prompt remittance. Write us.
THE FRED W. MUTH CO. • CINCINNATI, O.

HONEY LABELS
BEAUTIFUL DESIGNS
THE A. I. ROOT COMPANY
MEDINA, OHIO

Announcing

the purchase of the Alabama Apiaries of David Running. We have now arranged to supply a limited number of queens from this stock from our Georgia headquarters.

If interested in securing these queens, write at once so that we can arrange to supply you.

Queens, small lots, 60c each

Either Running stock or imported strain. Quantity prices on request.

Rossman & Long

Box 133 **Moultrie, Ga.**

Moore's Strain

Away back in 1879 I commenced rearing Italian queens with the object of improvement constantly in view.

By careful selection during all these years I have succeeded in producing a strain of three-banded, leather-colored Italian bees, known as MOORE'S STRAIN OF ITALIANS, which has won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Send for descriptive circular and read reports from those who have tried them.

Untested queens, 50 cents each.

J. P. MOORE, R. 3

Falmouth, Ky.

Former address, Morgan, Ky.

Safe arrival and satisfaction guaranteed.

WANTED TO BUY

WANTED — 2-frame Novice extractor. Give age, condition, lowest price. E. Cook, Andover, Conn.

WANTED—New or used Simplicity Extractor, 45-frame, and large Brand Melter. Give particulars in first letter. Box 2, Gleanings, Medina, Ohio.

BEES WANTED

WANTED—Bees, outfit, cash, 300, 500, colonies. Strickler's, Pascagoula, Miss.

HELP WANTED

WANTED—Experienced man in queen, package, and honey production. Year around work. Give full particulars when replying. Al Winn, Rt. 1, Petaluma, Calif.

MAGAZINES

THE INDIAN BEE JOURNAL—The only bee journal in India. Sample copy free. Yearly 7c6d. Apply Editor, Indian Bee Journal, Jeolikote, Dist., Nainital, U. P., India.

A BEE JOURNAL edited and published for Western Beekeepers. One dollar per year. Clubbed with Gleanings for $1.75 per year. Western Honey Bee, 3905 Lemon St., Riverside, California.

READ the South African Bee Journal to be conversant with conditions from far afield. Subscription 5/ per year. For further particulars, write to the Hon. Treasurer, P. O. Box 43, Cleveland, Johannesburg, S. Africa.

WESTERN CANADA BEEKEEPER, official organ of the Manitoba Beekeepers' Association, one year, $1.00; in combination with one year's subscription to Gleanings in Bee Culture, $1.60. Wallingford Building, Winnipeg, Canada.

MANY BEEKEEPERS have proven raising fox, mink, nutria, muskrats, rabbits, highly profitable. Send dime for sample copy. Canada's oldest fur farming magazine telling how. Fur Trade Journal of Canada, Box 31, Toronto, 2, Ontario.

THE BEE WORLD—The leading journal in Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free, 12 cents stamps. Membership in the Club, including o subscription to the paper 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

When Writing to Advertisers Mention Gleanings

Send your cappings and old comb to MUTH for rendering into beeswax. . . .
THE FRED. W. MUTH CO. Pearl and Walnut Cincinnati, Ohio

BETTER-BRED QUEENS Three-banded Italians

50c each. Head all your colonies with our Better Bred Stock. They have proven their good qualities throughout the U. S. A. and Canada.

CALVERT APIARIES, CALVERT, ALABAMA

YORK'S PACKAGE BEES and QUEENS

QUALITY BRED ITALIANS

A Great Season, Largest Demand Ever. Thanks to All!

With all fairness we wish to state we sold no bees or queens for less than our regular list price and all were supplied from our own apiaries only. We strived to give you the very best quality possible and comments are bearing this out. Will continue to supply bees and queens for remainder of season. Rush your order for prompt service. Prices as follows:

Young laying queens	**$ .75 each**
2-lb pkgs. bees with queens	**2.50 each**
3-lb. pkgs. bees with queens	**3.20 each**

Queens by airmail, add 5c per queen. Queens clipped, 10c each extra.

YORK BEE CO., :: Jesup, Georgia, U. S. A.

The Universal Apiaries

Resistant **QUEENS** **Progeny-Test**

Fall requeening will pay dividends next year.
There is a definite place for both stocks.

Prices: 1-24 .... 60c 25-49 .... 55c 50 or more, 50c

BESSONET BEE CO., Donaldsonville, La.

Add 10c per queen for stock bred for RESISTANCE.

We Ship No Bees or Queens After June 1st

for the remainder of the season. That we may have better post office service we are changing our address from Brooklyn, to Castleberry, Ala.

Caucasian Apiaries

Castleberry, Ala.

Home of genuine
Mountain Gray Caucasian Bees

Selected Queens

3-banded Italian

QUEENS

Any quantity 50c net

The PUETT COMPANY

HAHIRA, GA

CANADIAN QUEENS

Choice Italian Queens, fresh from our own yards here at Troy, Ont. Untested, 75c each; Tested, $1.

Also Bees and Bee Supplies

LORNE SHELLY, Troy, Ont., Can.

Get READY for 1943

Italians - Caucasians
Queens as good as money can buy 60c each.

Weaver Apiaries

Navasota, Texas

St. Romain's "Honey Girl" Italians

Hardy—good honey producers—gentle
2 Lbs. Bees With Young Queen ...$2.50
Untested (young) Queen, 1 to 3, 75c ea.
4 to 9, 65c ea; 10 or more, 60c ea.

A. D. ST. ROMAINS APIARIES
Moreauville, La.

When Writing to Advertisers Mention Gleanings

TALKS TO BEEKEEPERS

(Continued from page 619)

pay beekeepers who winter bees outside in this latitude and further north to apply some packing or insulation to hives of bees, the amount depending on the latitude, area, and severity of winters. Some use a permanently packed hive like the Buckeye hive. Others use wooden packing cases that fit over hives with space left for packing material. A tunnel is made from the hive entrance to the outside. Extension men in bee culture in various states and provinces should be able to supply reliable information as to the amount of packing needed. It is difficult for us here at Medina, to tell beekeepers over the country just how much packing, if any, is necessary.

Wind Protection

Bees wintered out of doors in cold climates should have some protection against prevailing winter winds. A row of low-growing shrubs, planted rather close together, furnishes excellent protection against winds. It is occasionally necessary in the absence of natural protection, such as shrubs or buildings, to erect a fence about 6 or 8 feet high with boards spaced about one inch apart, similar to snow fences found along railroads, to break the force of strong winter winds. Wind protection is important even though hives are well insulated.

Air Drainage

Some beekeepers have observed that colonies of bees located in low places do not, as a rule, winter well. Poor wintering in such a location, due to excess moisture within hives, may be, and doubtless is, due to poor air drainage. Air caught in a pocket does not circulate so freely as it would on the side of a hill or valley. It would seem preferable, when selecting an apiary site, to pick one where the air moves easily from higher to lower altitudes.

Honeydew

Since referring to honeydew in the September, 1942, Talk, page 558, more reports have been received regarding its prevalence this season. One beekeeper says that most of his surplus crop consists of honeydew. It has a high percentage of dextrin, and is therefore unsuited for winter bee food, as it causes dysentery. In some areas where a good fall flow is being secured the honeydew will likely be covered up and may not be used by the bees until next spring. In northern areas where little if any fall honey is stored to cover up the honeydew temporarily it would certainly seem advisable to feed at least ten pounds or more of sugar syrup during October to help correct the poor quality of winter stores.

EXTRA! EXTRA! EXTRA!

BIG DEMAND AS USUAL FOR

ROOT

HONEY LABELS

ATTRACTIVE—BRIGHT COLORS

Check your needs now and mail order at once. The all-out war effort prevents us from giving our usual service

. . . . . Catalog free

THE A. I. ROOT COMPANY

MEDINA, OHIO

HONEY AS SEEN BY THE FOOD CHEMIST

(Continued from page 590)

Spoilage of Honey, by H. F. Wilson, in ABC & XYZ of Bee Culture, 1935 Edition, pp. 488-490; 1940 Edition, pp. 475-477.
Discoloration of Honey, by V. G. Milum, ibid., 1940 Edition, pp. 419-422.
Heat Effect on Honey, by E. F. Phillips, ibid., 1940 Edition, pp. 451-454.
Granulation of Honey: How to Make Creamed Honey, by E. J. Dyce, ibid., 1940 Edition, p. 450.
Honey Granulation Controlled by New Method, by E. I. Fulmer, W. Bosch, O. W. Park and J. H. Buchanan, in Amer. Bee Jour., January 1934, pp. 12-14.
Granulation and Its Prevention, by V. G. Milum, ibid., July 1939, pp. 348-351.
Effects of Natural and Refined Sugars on Oral Lactobacilli and Caries Among Primitive Eskimos, by D. B. and L. M. Waugh, in Amer. Jour. Diseases of Children, vol. 59 (1940) No. 3, pp. 483-489.
Comparative Values of Various Carbohydrates Used in Infant Feeding, by F. W. Schlutz, E. M. Knott, J. L. Gedgoud and I. Loewenstamm; Jour. Pediatrics, vol. 12, No. 6, pp. 716-724; June 1938.
Use of Honey as a Carbohydrate in Infant Feeding, by F. W. Schlutz and E. M. Knott; Jour. Pediatrics, vol. 13, No. 4, pp. 465-473; October 1938.

PACKING BEES IN MISSOURI

(Continued from page 603)

ed over. This is all tied securely with binder twine to complete the pack, No. 6.

I do not have any trouble with wet, moldy combs. They keep dry and come through with flying colors.

Marshfield, Mo.

[Note: One reason Mr. Bumgarner does not have mouldy combs is that he provides upward ventilation for escape of moisture, through the top tray with dry saw dust. A top, or upper entrance helps to accomplish similar results.—Ed.]

TOO LATE TO CLASSIFY

WANTED—Colonies of bees located near Holland. Write Al Knoll, 78 W. 9th St., Holland, Michigan.

TEN ONE-FRAME observation hives, complete. Like new. $3.00 Lose Bros., 206 E. Jefferson, Louisville, Mo.

WANTED—ORANGE BLOSSOM HONEY, also white clover. Extracted comb and chunk, any amount. Lose Bros., 206 E. Jefferson, Louisville, Ky.

WANTED—Tons lots of white or light amber extracted honey. Quote best price. Sample desired. R. Wittal, 2931 East 120th Street, Cleveland, Ohio.

WANTED—Experienced beeman for the balance of this season. State age and experience. $85.00 per month including room and board. John Kneser, Hales Corners, Rt. 1, Wisconsin.

FOR IMMEDIATE SALE—100 or more colonies bees. Ten-frame dovetail guaranteed disease free, good condition, single or double brood chamber. E. E. Johnson, Bellaire, Michigan.

WISCONSIN FIELD MEETINGS

(Continued from page 628)

would call a round table of some of the leading beekeepers to answer them. Different leaders were picked out at each of the three different meetings and it was remarkable how nearly the replies seemed to coincide. When four or five different leading beekeepers agree on an answer to some particular question, it may be assumed that it must be somewhere near correct.

The Work of the American Honey Institute

A feature of no less importance was the work of the American Honey Institute. If there ever was a year when this organization was making itself felt among manufacturers of foods it was this year. We do not need to go into details at this time because much of the work is already presented on the AHI pages in all of the bee journals.

Mrs. Grace spoke to the general audience, including the men, and then following that, she spoke to the women on the use of honey in cooking. She was listened to with the closest attention.

Because of poor lighting conditions, it will be impossible to present the faces of all of the speakers but we are showing here a few as they appeared at the different meetings.

Thanks Thanks

To our many customers for their patronage this season. We can still furnish you with Queens and Packages

Untested Queens .....$..50
2-lb. Pkg. with Queen .. 1.75
3-lb. Pkg. with Queen .. 2.25

KEEP US IN MIND
for quantity and quality bees and queens in '43. Again, thank you.

NORMAN BROS. APIARIES
Ramer, Alabama

QUEENS
40c each
Highest Quality 3-band Italians. Prompt and Efficient Service Guaranteed
3-lb. Package with Queen.....$2.40

JOHN A. NORMAN
Rt. 2, Ramer, Alabama

No More Pettit's Queens This Year

We thank our many customers for a good summer business. Now booking orders for Package Bees for 1943. We will be ready.

Morley Pettit - - Tifton, Georgia

" NOTICE ! "

No more queens for this year, but will endeavor to have them next year as usual. Thanks to every one helping to make this our banner year.

BOLLING BEE CO., Bolling, Ala.

Carniolans ! -o- Caucasians !

A few fine Carniolan and Caucasian queens left. Not too late to replace a poor or failing queen here and there. Untested, 60c each; 6 or more, 50c each. Tested, $1.00. By Air Mail, 5c extra per queen.

ALBERT G. HANN, Glen Gardner, New Jersey

For Last Minute Requeening

Send to us—we rear queens late—special for fall use. Young, mated, and laying Italians, 75c each.

WHITE PINE BEE FARMS

ROCKTON, L. B. 80, PA.

Australian Beekeeping News
The Leading Bee Journal of the Southern Hemisphere is the

"Australasian Beekeeper"

Subscription 5 shillings per year. Start any time. Inquire for International Money Order for 5 shillings (Australian) at your Post Office.
Write now to The Editor, P. O. Box 20. West Maitland New South Wales Australia

BEEKEEPERS ITEM

Serving the beekeeping industry for a quarter century without bias or prejudice. "The forum for the thoughtful." One year $1.00; two years, $1.50; sample copy, 3c stamp.
With Gleanings it provides a combination that covers the beekeeping field.
Both magazines for one year, $1.75

BEEKEEPERS ITEM
P.O.Box 687 San Antonio, Texas

GOOD EATING

(Continued from page 597)

ing this delicious cake will make a very appropriate Halloween treat.

Honey Peanut Butter Cupcakes

One-third cup shortening, 1 cup honey, ½ cup peanut butter, 2 beaten eggs, ½ cup brown sugar, 2 cups sifted enriched flour, ½ teaspoon salt, 2½ teaspoons baking powder, ½ cup milk, and 1 teaspoon vanilla.

Cream shortening and honey; add peanut butter and mix well. Add eggs beaten with the brown sugar. Add sifted dry ingredients alternately with milk and vanilla. Fill greased cupcake pans half full. Bake in moderate oven, 350 degrees F., for 25 minutes. When ready to serve top with honey sweetened whipped cream.

If your locality contains the treat-or-trick type of youngsters you might like to use big puffy raisins atop the whipped cream, arranging them in funny face formation.

Honey Chocolate Cream Pie

One and ½ cups milk, 4 eggs separated, ½ cup honey, ¼ teaspoon salt, 1 tablespoon Knox Gelatine, ⅓ cup cold water, 1 teaspoon vanilla, ⅛ teaspoon nutmeg, 2 ounces grated sweet chocolate, 1 cup cream, and 1 9-inch baked pastry shell.

Sprinkle half of the grated chocolate over the bottom of the hot pastry shell. Scald milk in a double-boiler. Add a small quantity of hot milk to beaten egg yolks. Return to double-boiler. Beat well and continue cooking until custard coats spoon. Add gelatin softened in cold water. Chill. Beat egg whites until stiff, then beat honey in gradually. Add to chilled mixture with salt, vanilla, and nutmeg. Pour mixture into pastry shell. Chill until set. When ready to serve, spread with the whipped cream and top with remaining half of grated chocolate.

Honey Baked Lima Beans

Three cups dried lima beans, ⅓ cup honey, 1 teaspoon salt, ½ teaspoon dry mustard, and 4 slices bacon.

Soak lima beans overnight. Drain. Cook in water until tender. Drain, reserving the liquid. Place lima beans in buttered casserole or individual bean pots. Combine honey, salt, and mustard; add bean liquid to make 1 cup. Pour over lima beans. Arrange bacon strips over the top. Cover and

(Continued on page 639)

GOOD EATING

(Continued from page 638)

bake in amoderate oven 350 degrees F., for 2 hours. Uncover to brown.

Jellied Peach Cobbler

One-fourth cup cold water, 1 envelope Knox Gelatine, 1 cup hot water, ⅓ cup honey, ½ cup orange juice, ¼ cup butter, melted, 1 tablespoon lemon juice, ¼ teaspoon salt, 2 cups sliced honey canned peaches, and 1½ cups honey graham cracker crumbs.

Soften gelatine in cold water. Add honey, salt, and hot water and stir until honey and gelatine are dissolved. Add orange juice and lemon juice. Cool until beginning to thicken, then add peaches. Mix graham cracker crumbs and melted butter thoroughly. Put part of crumbs in bottom of mold or pan that has been rinsed in cold water, packing them in firmly. Pour in peach mixture. Sprinkle top with remaining buttered crumbs and chill. When firm, unmold and garnish with sliced peaches.

Aurora, Neb.

When Writing to Advertisers Mention Gleanings

ROOT SERVICE From CHICAGO

CONTAINERS

We have large stocks and all packages offered elsewhere.

Glass Packages
Tin Packages
Cartons and Wrappers
Shipping Cases

Write for present listing.

We are always in the market for Beeswax and Honey. Tell us how much you have.

A. I. Root Co. of Chicago
224 West Huron Street
Chicago, Illinois

NEW HONEY RECIPE FOLDER

This is a brand new attractive oval-folder containing 12 delicious recipes. It fits into the top of a five-pound honey pail. Sample sent on request.

HONEY TREATS

An attractive 32-page booklet, 3x6 inches, which contains practically all new honey recipes It is done in blue and white. As soon as it is off the press copies will be mailed to members.

For further particulars write

American Honey Institute
Madison, Wisconsin

QUEENS QUEENS

CAUCASIAN ITALIAN

FOR INCREASE
FOR REQUEENING
FOR BETTER BEEKEEPING
FOR QUEENLESS COLONIES
FOR ALL OTHER REQUIREMENTS
FOR BEST RESULTS GET STOVER'S

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MAYHEW, MISS.

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